

CIVILS

LANDSCAPING

AQUA

SPORT

INSTALLATION INSTRUCTIONS

EVERYTHING YOU NEED TO KNOW ABOUT INSTALLING HAURATON PRODUCTS



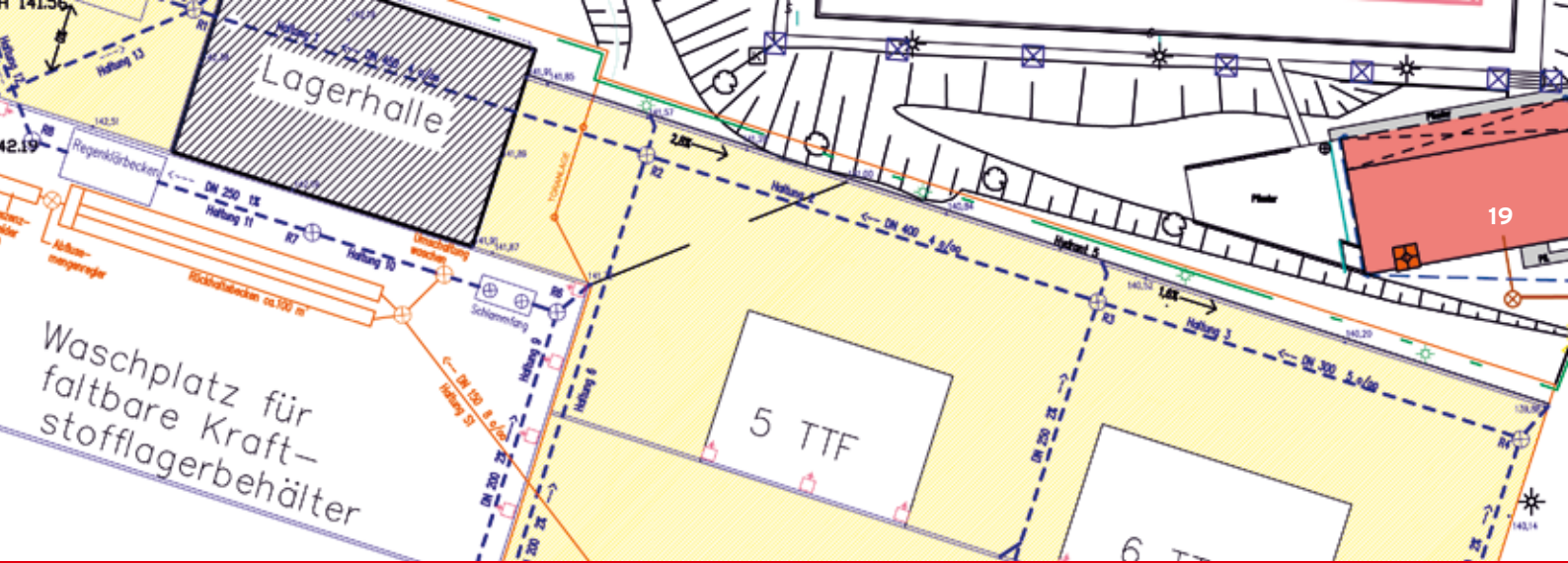
EVERYTHING YOU NEED TO KNOW ABOUT INSTALLING HAURATON PRODUCTS

DETAILED INSTALLATION INSTRUCTIONS FOR DIFFERENT APPLICATIONS AND LOAD CLASSES

Each single building component can prove its usefulness in function and reliability only once it has been installed in its final position. The prerequisite for that is that it has been installed correctly, which is not any different for HAURATON products.

We will give building contractors all our support for a successful completion of the job. Our detailed installation instructions and specifications contain everything you need to know about the installation in different applications and for different loading capacities. Where it is necessary to observe special details when installing our products, we will be happy to send one of our competent members of staff to the building site to discuss all relevant points and give valuable tips.

HAURATON installation instructions - so that the installation runs smoothly.



CIVILS

HIGHLY STABLE FASERFIX SUPER DRAINAGE CHANNELS MADE OF FIBRE REINFORCED CONCRETE.

FASERFIX®SUPER KS / FASERFIX®SUPER	8
FASERFIX®POINT	23
FASERFIX®BIG	26
RECYFIX®SUPER KS / RECYFIX®SUPER	30
RECYFIX®SUPER X	37
FASERFIX®TRAFFIC	40
RECYFIX®HICAP®	45



LANDSCAPING

VERSATILE DRAINAGE RANGE FOR ALL REQUIREMENTS OF GARDENING AND LANDSCAPING.

RECYFIX®PLUS / RECYFIX®STANDARD	50
SLOTTED CHANNELS	58
FASERFIX®STANDARD	62
DACHFIX®	66
RECYFIX®GREEN SUPER	68
RECYFIX®GREEN STANDARD	70



AQUA

INTELLIGENT SOLUTIONS FOR WATER TREATMENT AND SEEPAGE.

DRAINFIX®BLOC	72
DRAINFIX®TWIN	78



SPORT

THE COMPREHENSIVE RANGE FOR ALL SPORTS FACILITIES - INSTALLATION EXAMPLES FOR OUR SPORTS FACILITIES RANGE ARE AVAILABLE ON REQUEST.

LOAD CATEGORIES AND THEIR APPLICATION AREAS IN ACCORDANCE WITH DIN EN 1433



CATEGORY A 15, LOAD CLASS 15 KN

Domestic driveways pedestrian areas and cycle paths.



CATEGORY B 125, LOAD CLASS 125 KN

Footpaths, pedestrian zones and similar areas, parking lots and parking decks for passenger cars.



CATEGORY C 250, LOAD CLASS 250 KN

Road gutters, hard shoulders not exposed to traffic car parks not accessible to heavy wheel loads.



CATEGORY D 400, LOAD CLASS 400 KN

Carriageways hard shoulders as well as parking areas accessible to all types of road vehicles.



CATEGORY E 600, LOAD CLASS 600 KN

Areas exposed to high wheel loads, e.g. ports and docks.



CATEGORY F 900, LOAD CLASS 900 KN

Areas exposed to particularly high wheel loads, e.g. air traffic areas.

IN CASES OF DOUBT THE HIGHER CATEGORY HAS TO BE CHOSEN!

QUALITY CERTIFICATION IN ACC. WITH DIN EN ISO 9001:2000

As one of the first companies in the building industry, HAURATON achieved quality certification in accordance with DIN EN ISO 9001 back in 1993. The quality requirements of the current DIN EN ISO 9001:2000 cover not only the products but the whole company, including development, design, production, assembly and customer service. HAURATON's quality management in accordance with DIN EN ISO 9001:2000 provides the highest degree of reliability and safety to our customers.

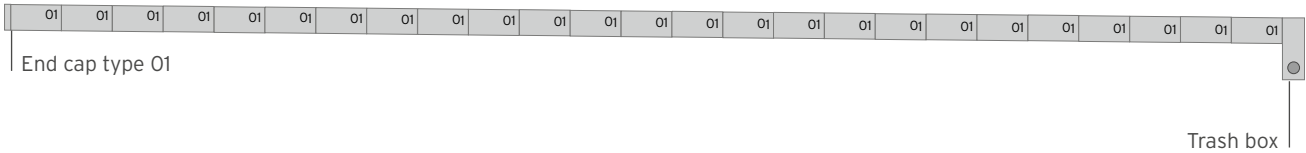
We hold General Building Control Approvals in acc. with the WHG (Water Resources Act) for the following channel systems:

FASERFIX SUPER channels	approval no. Z-74.4-68
FASERFIX BIG SL channels	approval no. Z-74.4-67
FASERFIX BIG BL channels	approval no. Z-74.4-66

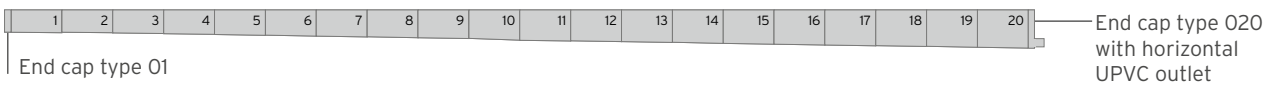


DEFINITION OF TYPES OF SLOPE

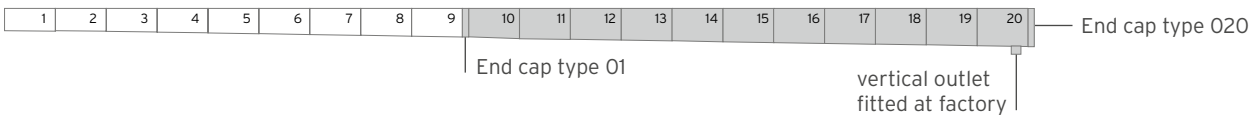
Run of channels without built-in fall. Water flows off due to the existing slope in the traffic area.



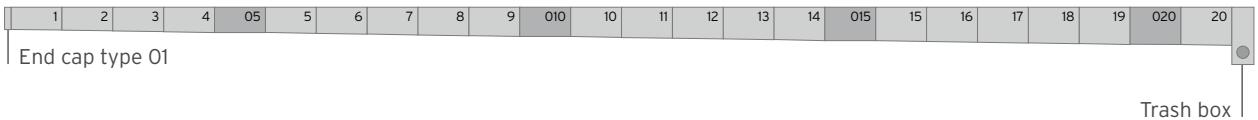
Run of channels with built-in fall. Water flows off due to continuous built-in fall.



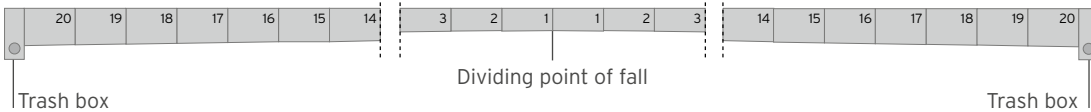
Run of channels with built-in fall. Selected channels no. 10-20.
High hydraulic capacity due to large back pressure depth.



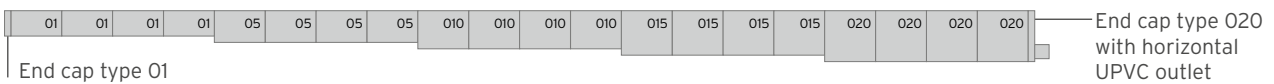
Run of channels with built-in fall. Selected channels no. 1-20.
Length of run with fall extended by channels without fall, 1 of type 05, 010, 015 and 020 each.



Run of channels with built-in fall. Long channel runs can be achieved with falls in two directions in the same run.
Max. length of run with built-in fall: 40 m.



Run of channels without built-in fall. Water flows off due to step slope.



Channel runs can be connected to drainage canals via trash boxes or via end caps with horizontal UPVC outlet.

QUANTITIES OF JOINT SEALER REQUIRED FOR APPLICATIONS UNDER WHG (WATER RESOURCES ACT)

**Consumption of elastic joint sealer Masterflex 700 FR gun grade ETA-05/0259,
only for WHG applications with general building control approval, e.g. at filling stations**

Channels with general building control approval no. Z-74.4-68, no. Z-74.4-67, no. Z-74.4-66	Channel type	approx. length of joints up to top edge safety joint (mm)	approx. consumption in ml per joint / end cap) incl. 15 % spreading loss	approx. no. of butt joints per cartridge
FASERFIX SUPER KS 100	01	245	34	13
	010	350	48	9
	020	470	65	6
FASERFIX SUPER 150	01	450	62	7
	010	560	77	5
	020	680	94	4
FASERFIX SUPER 200	01	570	79	5
	010	660	91	4
	020	760	105	4
FASERFIX SUPER 300	01	835	116	4
	020	1230	169	2
FASERFIX SUPER 400	01	1055	145	3
	01H	1245	172	2
FASERFIX SUPER 500	01	1290	178	2
FASERFIX BIG SL 100	20	715	99	4
FASERFIX BIG SL 150	020	810	112	4
FASERFIX BIG SL 200	020	940	129	3
FASERFIX BIG SL 300	010	1120	155	2
FASERFIX BIG BL 150	020	845	117	4
FASERFIX BIG BL 200	020	905	125	3

Masterflex 700 Primer ASP:

for permeable surfaces, size of container 1 l, sufficient for approx. 80 lin m. of joint

Masterflex 700 Primer FE:

for non permeable surfaces, size of container 1 l, sufficient for approx. 80 lin m.
of joint / end cap / frame

Note:

The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products with general building control approval that have been tested in the same way. For further information please refer to safety data sheet in accordance with 91/155/EEC from BASF Building Technology, Dept. Protection of the Environment, Tel. +49 334 38500, Fax: +49 334 3850135

QUANTITIES OF JOINT SEALER REQUIRED FOR WATERTIGHT JOINTS

Consumption of RECYFIX Sealer Sikaflex TS Fast

Channels	Channel type	approx. consumption per butt joint	Channel butt joints per bag	approx. consumption per end cap
FASERFIX TRAFFIC SUPERBLOC 200	020	80 g	8	81 g
RECYFIX PLUS 100, RECYFIX STANDARD 100	60 and 80	20 g	30	8 g
	01	30 g	20	10 g
	010	40 g	15	20 g
RECYFIX PLUS 150, RECYFIX STANDARD 150	01	60 g	10	20 g
RECYFIX PLUS 200, RECYFIX STANDARD 200	010	70 g	8	20 g
RECYFIX STANDARD 300	01	180 g	3	40 g

One bag of RECYFIX Sealer Sikaflex TS Fast contains 600 ml, equivalent to 660 g.

A suitable bag pistol dispenser is required for the RECYFIX Sealer bag.

For technical information sheet for Sikaflex TS Fast see: For safety data sheets for Sikaflex TS Fast see:

<http://www.sika.de/con-katalog-details.htm?id=14-8>

<http://www.dichten-und-kleben.de/sikatackfolien.html>

FASERFIX® SUPER KS / FASERFIX® SUPER – INSTALLATION INSTRUCTIONS

Our installation instructions / examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer.

Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation. Additional requirements must be met when the products are installed at petrol stations / tank installations. For more detailed information please contact the manufacturer.

1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.
3. The rigidity of the side walls of the FASERFIX SUPER channel body ensures that the dynamic forces created during the correct installation of adjoining concrete, asphalt or paving areas will not cause any damage. No additional reinforcements are required.
4. When the products are installed in paved or slab-covered surfaces, the joint along the channels should be filled with a mineral - or bituminous compound. Installation in areas exposed to heavy loads, from category D 400: any dynamic thrust forces acting on the paving must not impact directly on the sidewalls of the channels but have to be transferred to the backing structure through direct contact, e.g. by installing the first 3 rows in a modified concrete bedding.
5. Where it is possible that extreme thrust forces occur, e.g. where there are significant gradients, special additional installation details are required by the installer. For further information please contact us.
6. Any safety joints installed in accordance with EN 1433 can be filled up to the top edge of the surfacing, if required.

Similarly, these instructions apply to gullies and points of entry. Where the channels are to be installed in paved areas with load classes D 400 to F 900, e.g. in air strips, logistic centres, container terminals, bus stations etc., the channel backing has to be increased and raised to the surface in the form of an in-situ concrete casing along the channel, with concrete quality at least C 30/37 X F4. The

concrete casing should permanently stand up from the top edge of the channel by 3 to 5 mm. Where required, installers may opt to reinforce the concrete casing with reinforcement steel.

INSTALLATION INSTRUCTIONS FOR SEALING JOINTS IN CONNECTION WITH FASERFIX SUPER CHANNELS IN ACCORDANCE WITH DIN EN 1433

Area of application:

For permanently elastic connection points in cross joints of FASERFIX SUPER channels to meet the requirements of DIN EN 1433. For use internally and externally as well as for sealing face walls, gullies and the joints with the adjoining surface finishes along the channels.

Substrate conditions:

The surfaces to be bonded have to be sufficiently firm, dry, clean and free from oil and grease to ensure that bonding and curing is not adversely affected. Where these conditions are in question, it is possible to apply a priming coat to the contact surfaces. To bridge the gap between the channel joints before applying a permanently elastic joint filler, attach a self-adhesive masking tape or installation tape. This will prevent the joint sealer to bond with the floor of the joint. In the case of cut cross joints, insert a round closed-cell PE cord between the flanks of the joint.

Installation instructions for joint sealers

in cross joints:

The filling of the joints has to ensure that the joint sealer can absorb any potential movements (i.e. bonding on both flanks of the joint). Once the joint has been filled with a sealer, use a smoothing compound to level the surface of the joint. Finally, use a soap solution to smooth off the surface of the joint. Where required, a joint can be made between the end of the cross joint and the joint with the surface covering along the channel.

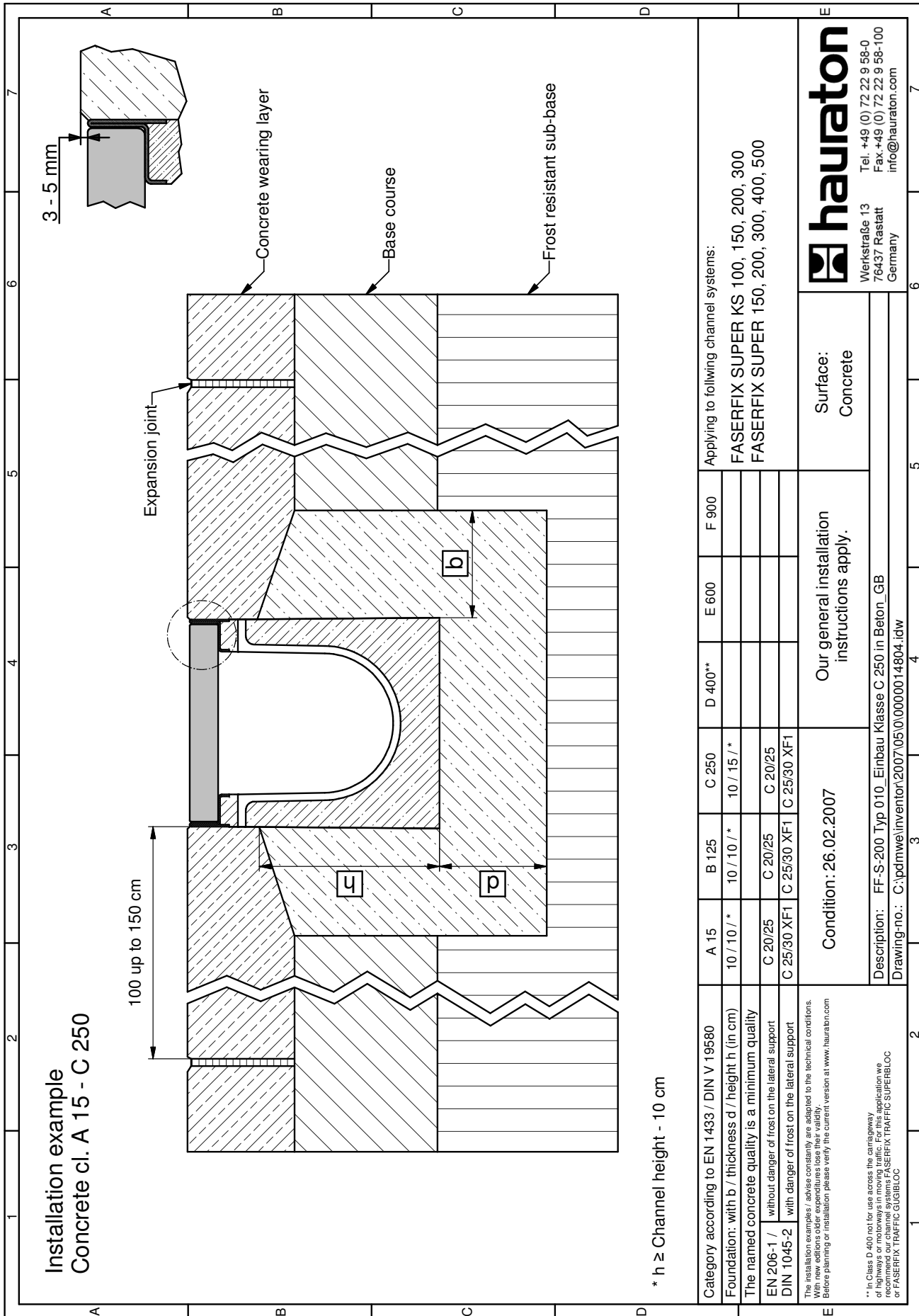
INSTALLATION INSTRUCTIONS FOR SEALING FACE WALLS AND TRASH BOXES:

Clean the face wall surfaces and apply the permanently elastic sealing compound with a cross section of 6 x 15 mm around the periphery. Then compress the joint to a minimum thickness of 2 mm and hold in that position for 24 hours. Any sealing compound squeezing out at the edges should be smoothed off as described above. When sealing the joints with trash boxes, proceed in a similar way with the respective contact surfaces. The components are sufficiently heavy to hold the joints in place. Surfaces regulated by the WHG (Water Resources Act) are subject to special requirements. For further information please contact us.

Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

**LOOK UP OUR CURRENT
INSTALLATION INSTRUCTIONS
ON THE INTERNET
WWW.HAURATON.COM**

FASERFIX®SUPER KS / FASERFIX®SUPER



FASERFIX®SUPER KS

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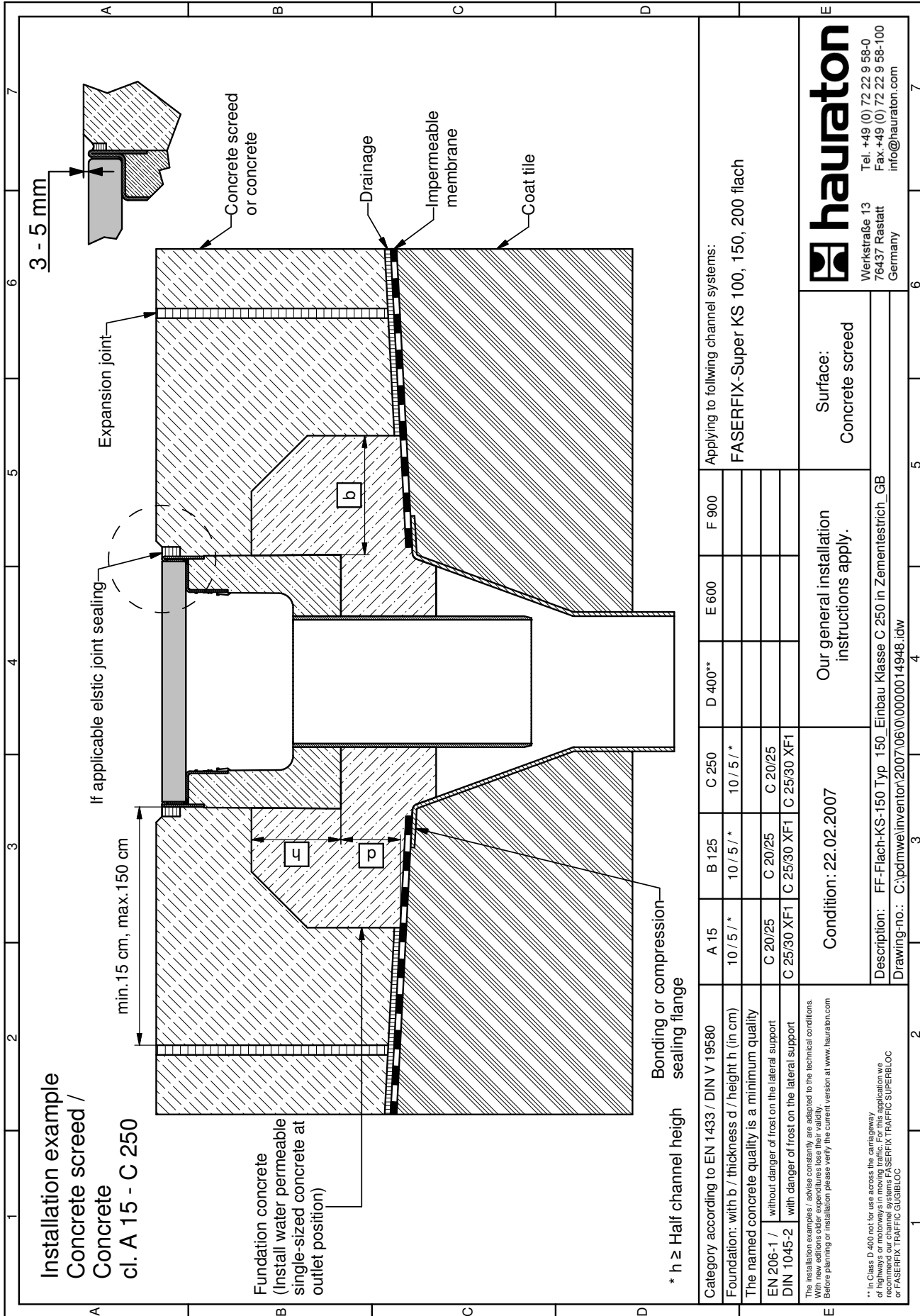
Installation example
Concrete cl. A 15 - C 250

* h = Channel height plus overhang

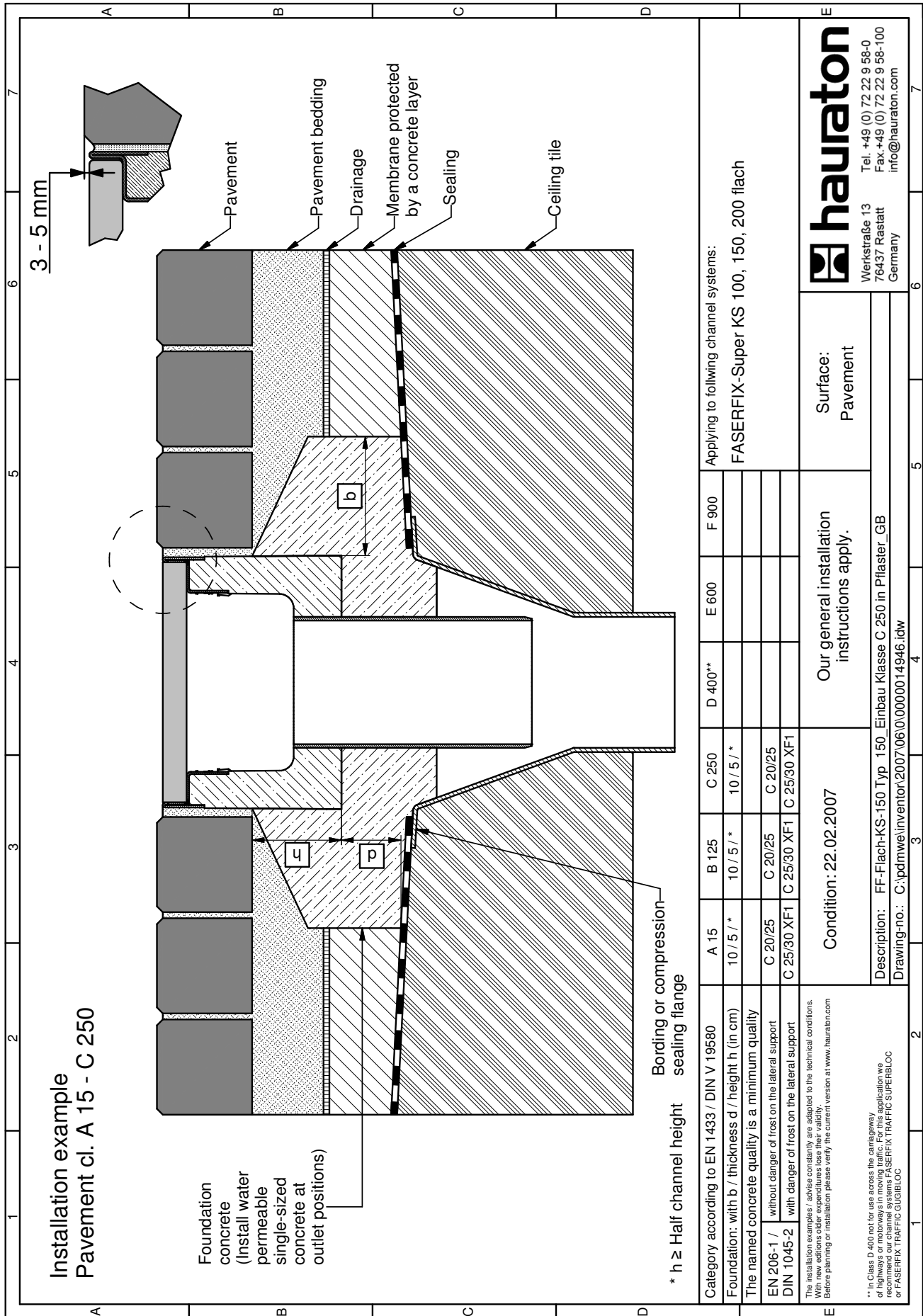
Category according to EN 1433 / DIN V 19580	A 15	B 125	C 250	D 400**	E 600	F 900	Applying to following channel systems: FASERFIX SUPER KS 100, 150, 200 flach
Foundation: width b / thickness d / height h (in cm)	10 / 2 / *	10 / 2 / *	10 / 2 / *				
The named concrete quality is a minimum quality							
EN 206-1 / without danger of frost on the lateral support	C 30/37 XF4	C 30/37 XF4	C 30/37 XF4				
DIN 1045-2 with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1				
<p><small>The installation examples / advice constantly are adapted to the technical conditions. We recommend to use the current version at www.hauraton.com. Before planning or installation please verify the current version at www.hauraton.com. For the installation into a concrete floor construction we recommend an impermeable membrane under the channels.</small></p> <p><small>** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC DOUBLELOC.</small></p>							
Condition: 22.02.2007			Our general installation instructions apply.			Surface: Concrete	
<p>hauraton Werkstraße 13 76437 Rastatt Germany Tel. +49 (0) 72 22 9 58-0 Fax. +49 (0) 72 22 9 58-100 info@hauraton.com</p>							
Description: FF-Flach-KS-100 Typ 80 Einbau Klasse C 250 in Beton_GB				Drawing-no.: C:\pdr\mwe\inventor\2007\05\0\0000014842.idw			

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FASERFIX®SUPER KS



FASERFIX®SUPER KS



Applying to following channel systems:

FASERFIX-Super KS 100, 150, 200 flach

Category according to EN 1433 / DIN V 19580	A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: with b / thickness d / height h (in cm)	10 / 5 / *	10 / 5 / *	10 / 5 / *			
The named concrete quality is a minimum quality						
EN 206-1 / without danger of frost on the lateral support	C 20/25	C 20/25	C 20/25			
DIN 1045-2 with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1			

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Surface:
Pavement

Our general installation instructions apply.

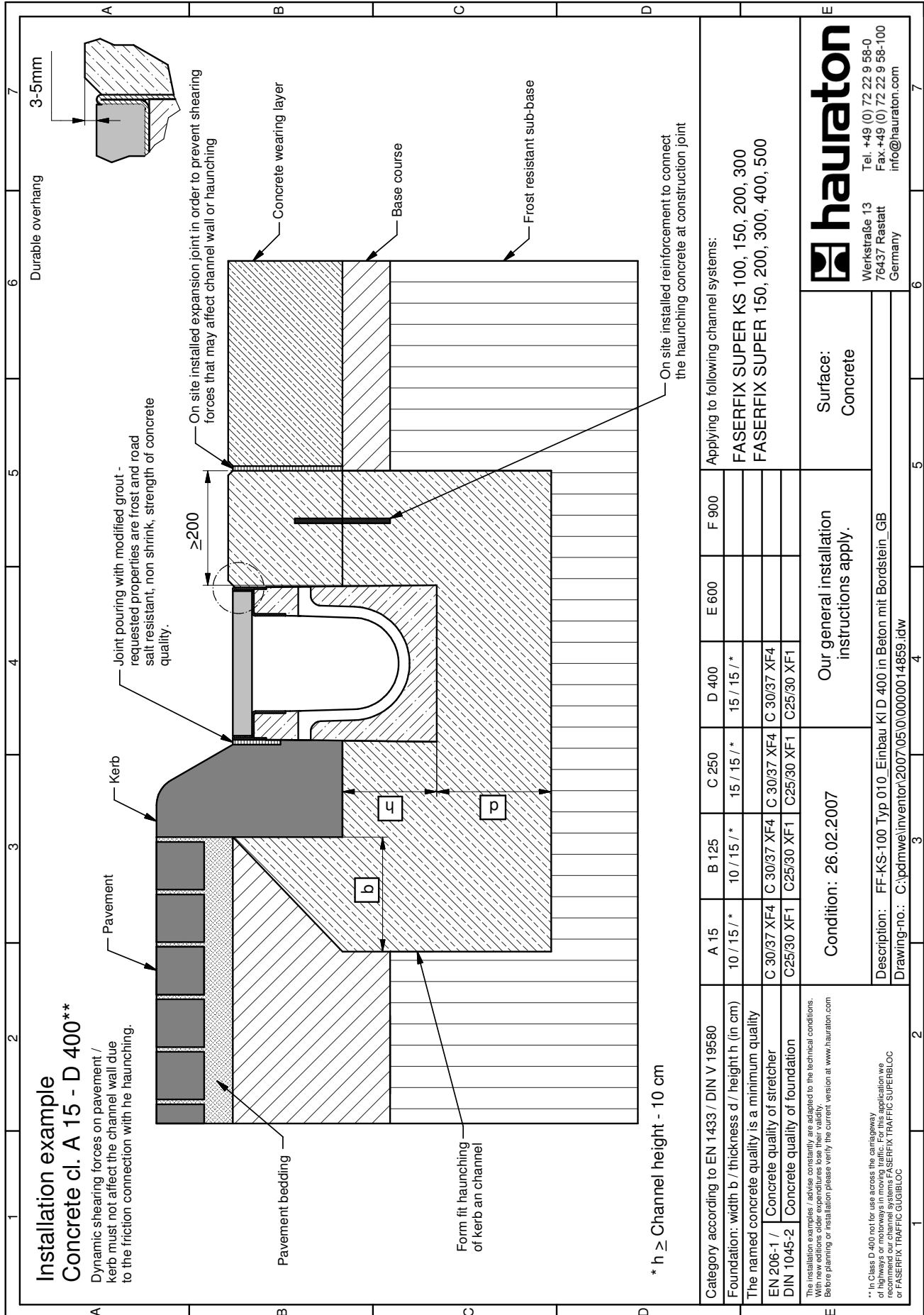
Condition: 22.02.2007

Description: FF-Flach-KS-150 Typ 150_Einbau Klasse C 250 in Pflaster_GB
 Drawing-no.: C:\pdr\mwe\inventor\2007\06\0\0000014946.idw

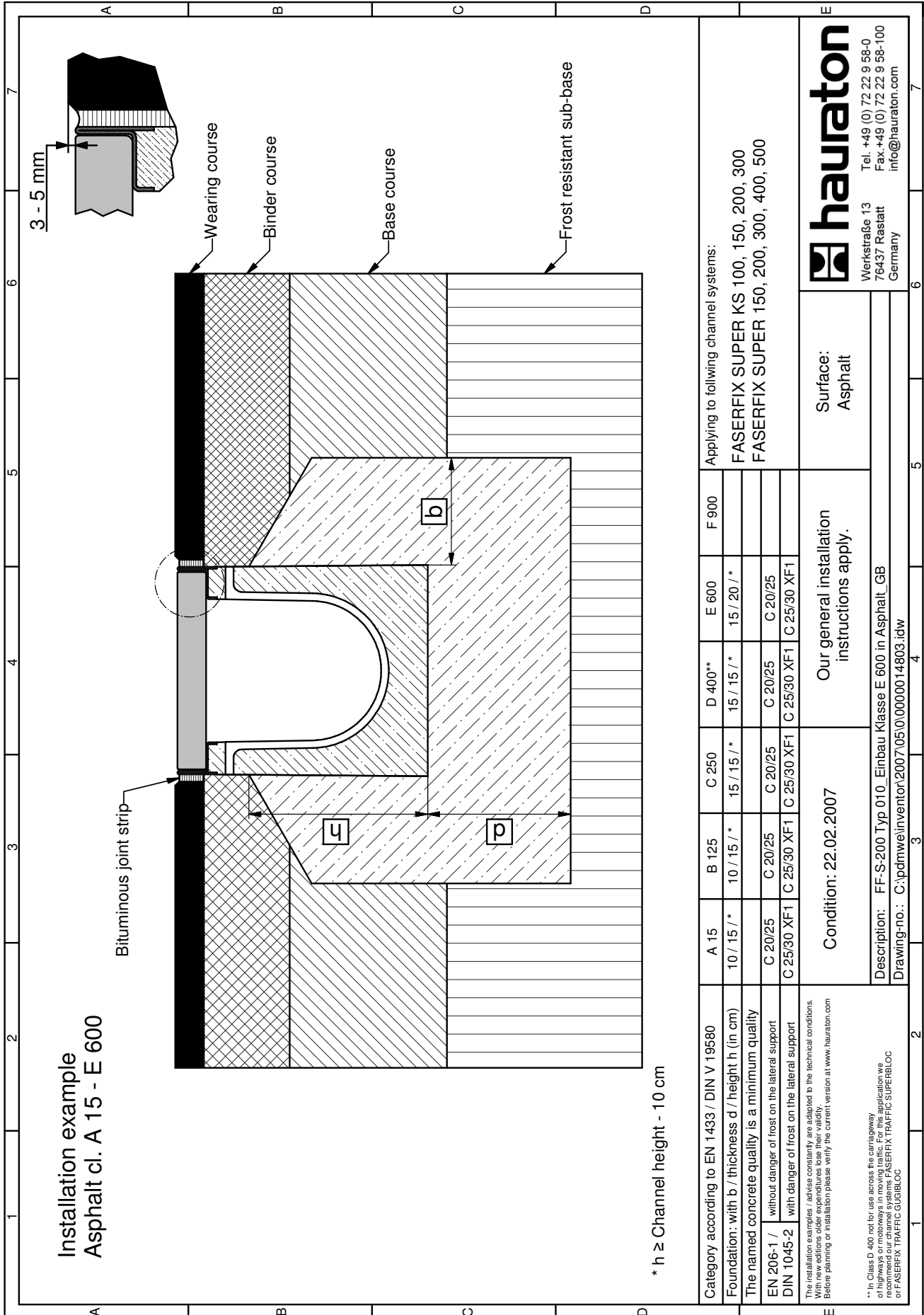
The installation examples / tables respectively are subjected to the technical conditions of highways or motorways in moving traffic. For the application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC SUPERBLOC.

** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For the application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC SUPERBLOC.

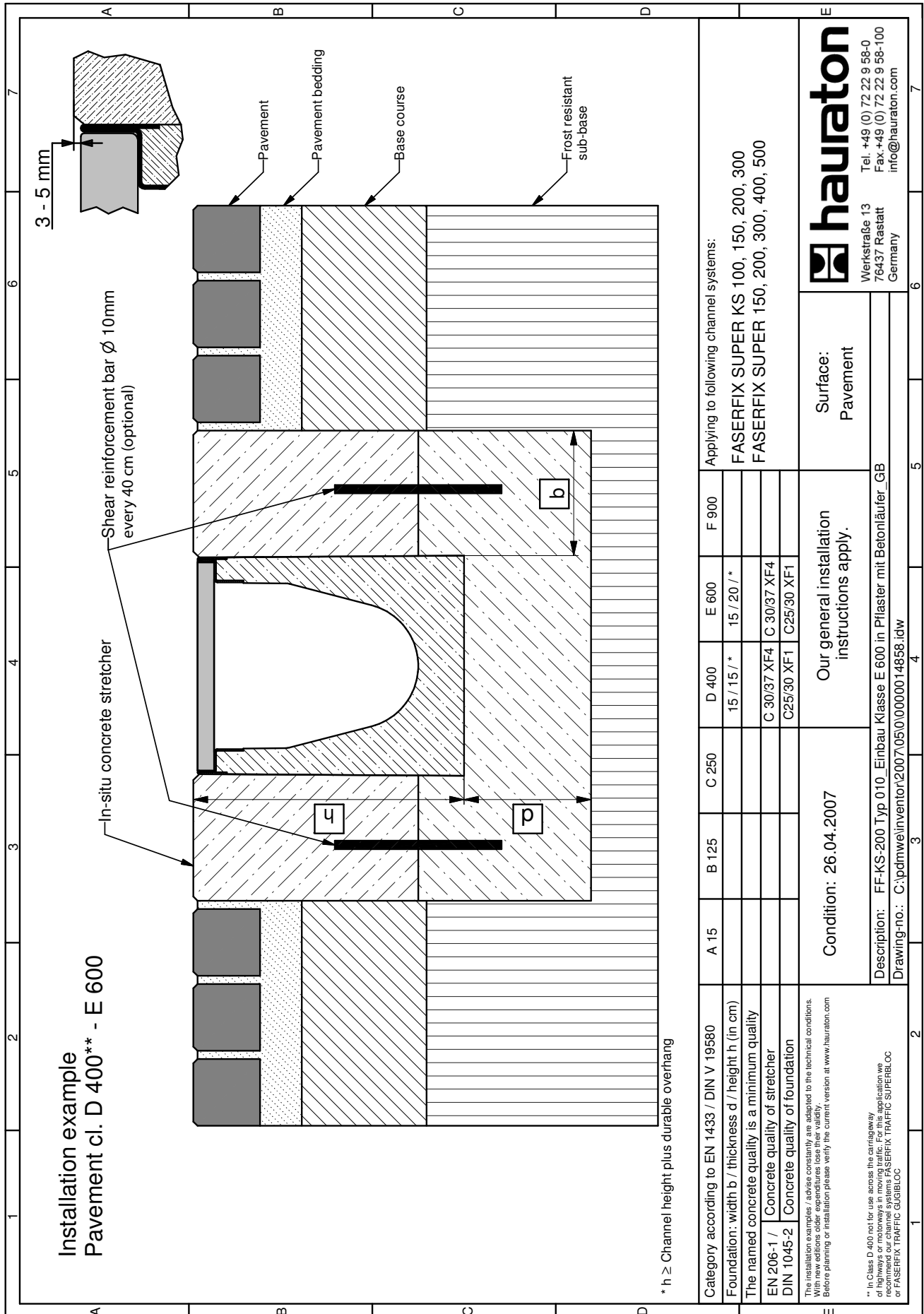
FASERFIX®SUPER KS / FASERFIX®SUPER



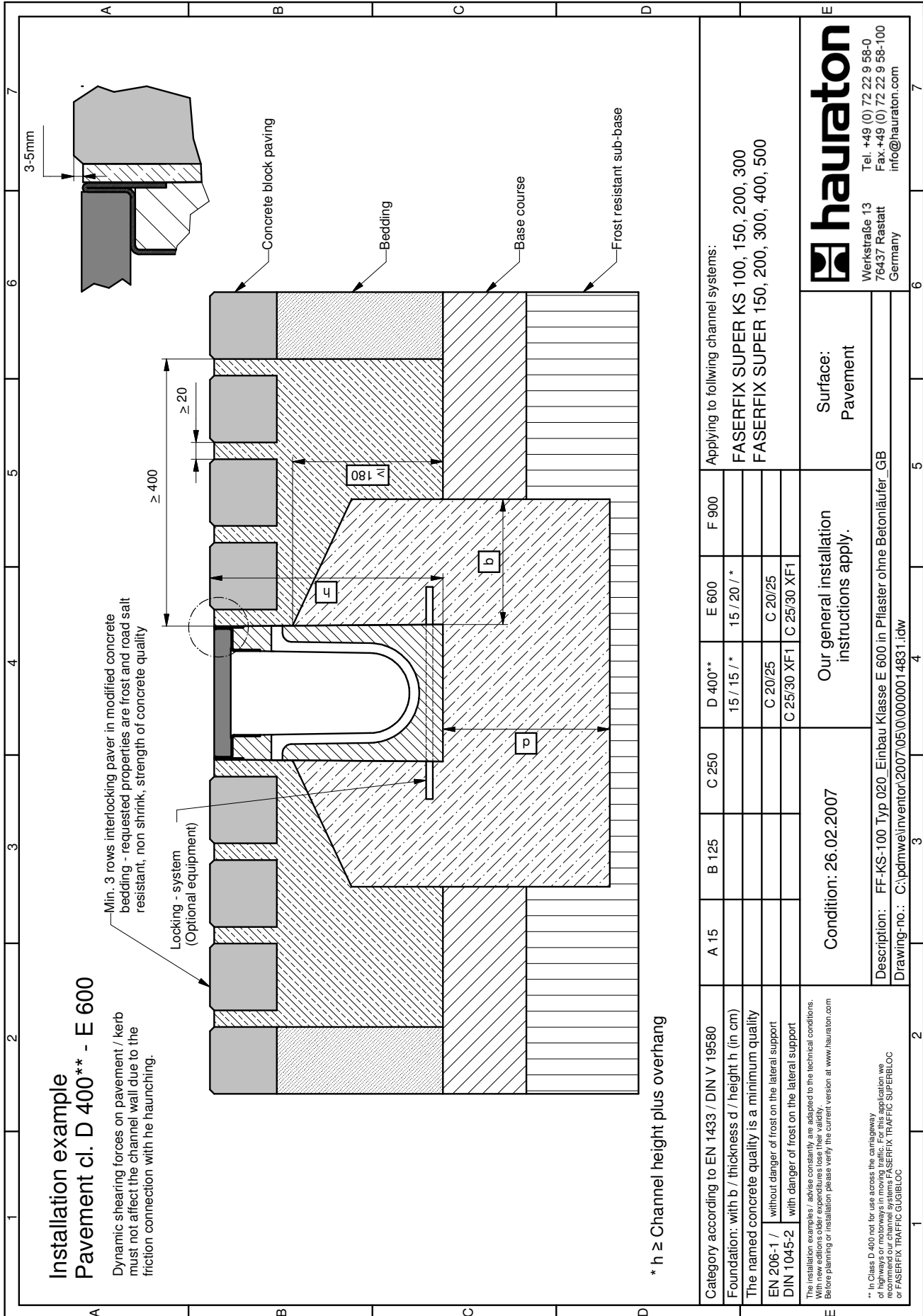
FASERFIX®SUPER KS / FASERFIX®SUPER



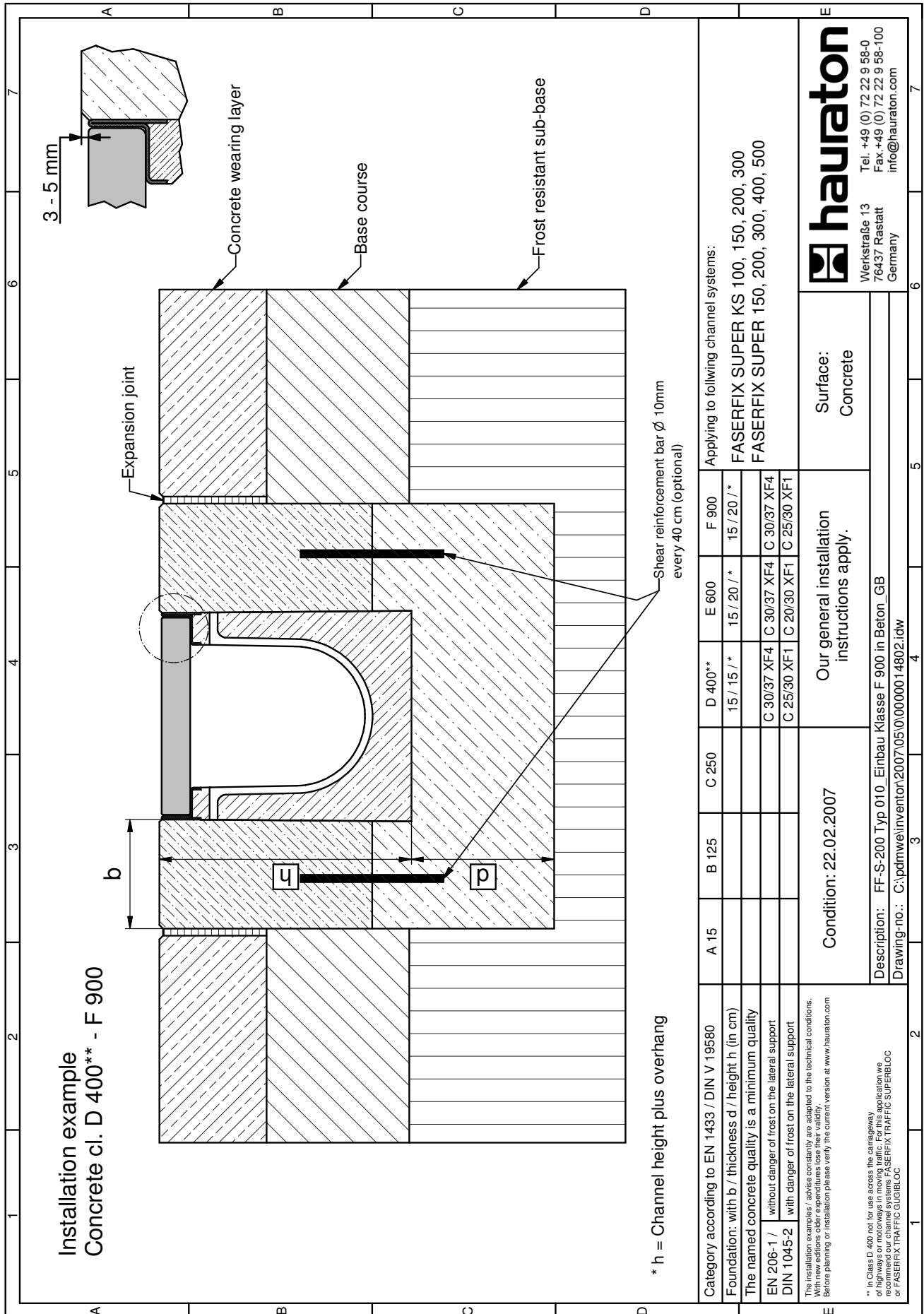
FASERFIX®SUPER KS / FASERFIX®SUPER



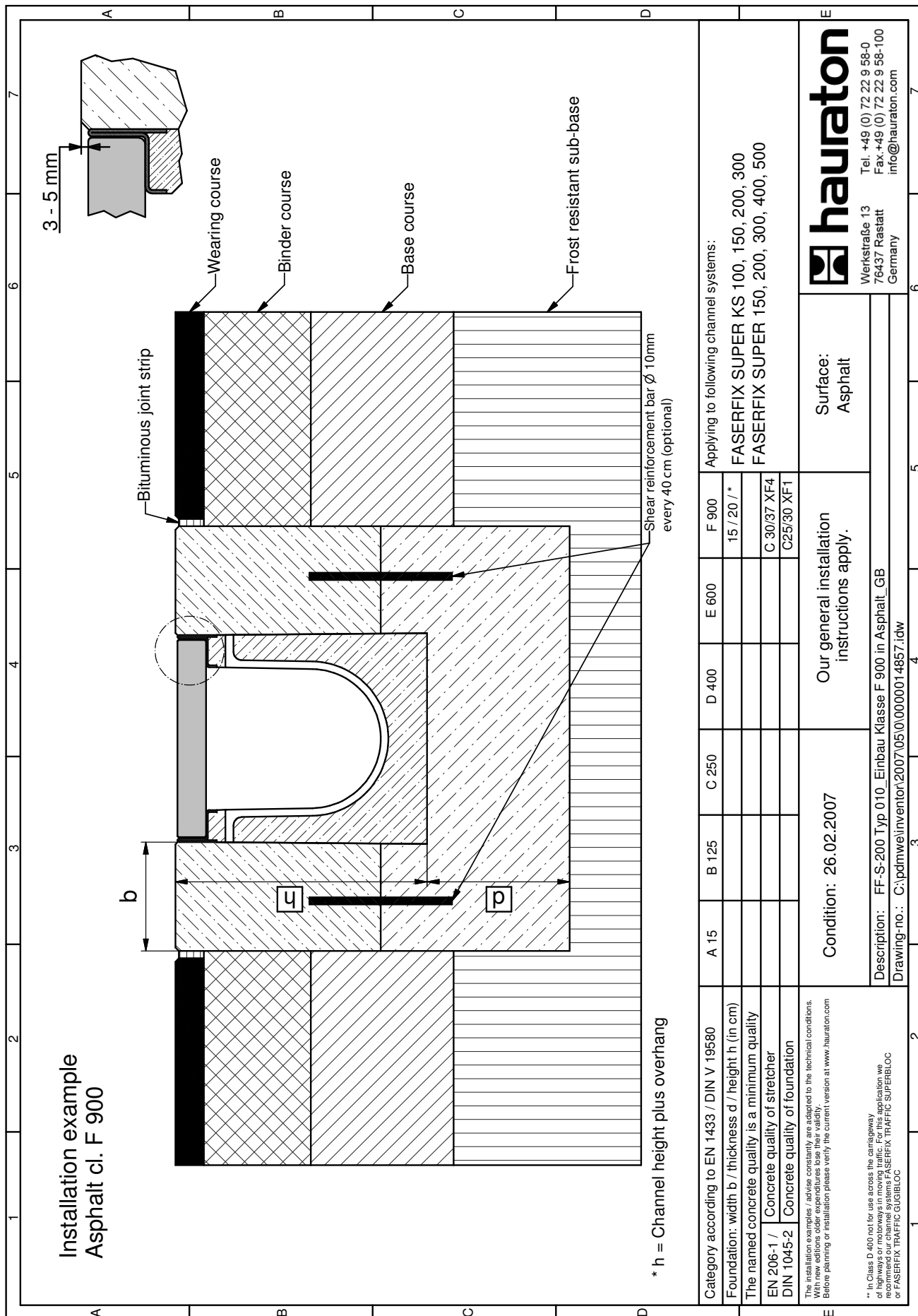
FASERFIX®SUPER KS / FASERFIX®SUPER



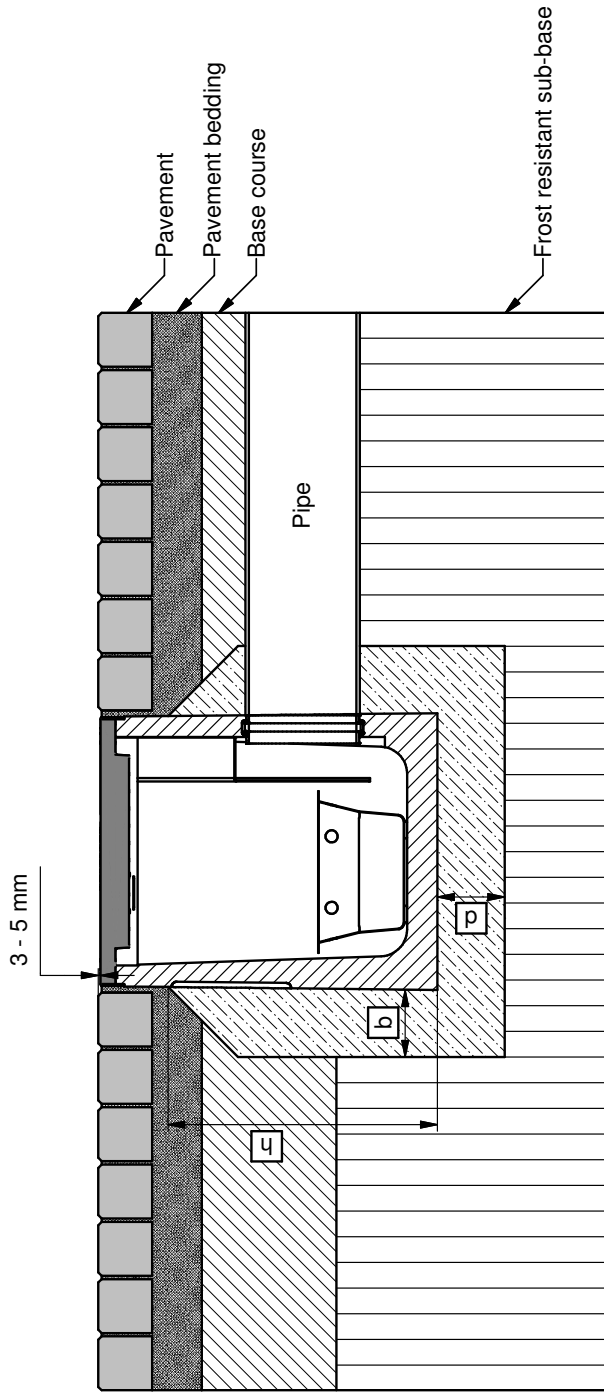
FASERFIX®SUPER KS / FASERFIX®SUPER



FASERFIX®SUPER KS / FASERFIX®SUPER



Installation example Pavement cl. A 15 - C 250



* h ≥ Gully height - 10 cm

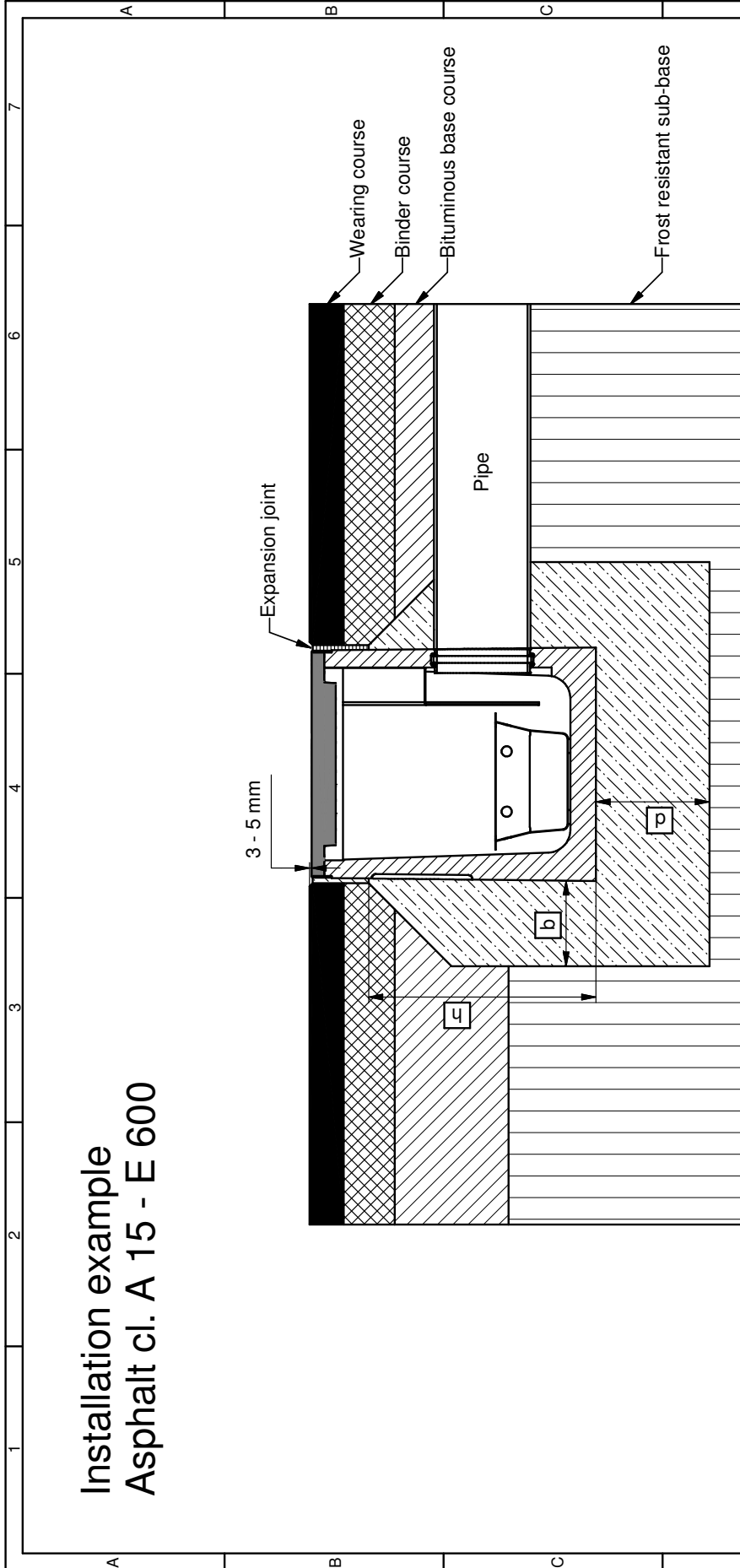
Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900	Applying to following channel systems:
Foundation: with b / thickness d / height h (in cm)		10 / 10 / *	10 / 10 / *	10 / 15 / *				FASERFIX POINT SUPER 30x30
The named concrete quality is a minimum quality		C 20/25	C 20/25	C 20/25				FASERFIX POINT SUPER 40x40
EN 206-1 /	without danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1				
DIN 1045-2	with danger of frost on the lateral support							
<p>The installation examples / advise constantly are adapted to the technical conditions. Before planning or installation please verify the current version at www.hauraton.com</p>								
<p>** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC GUGIBLOC</p>								
Condition: 22.02.2007				Our general installation instructions apply.				Surface: Pavement
Description: FF-POINT_SUPER-40x40 Einbau in Pflaster_GB Drawing-no.: C:\pdmwe\inventor\2007\05\10\0000014801.idw								



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FASERFIX®POINT

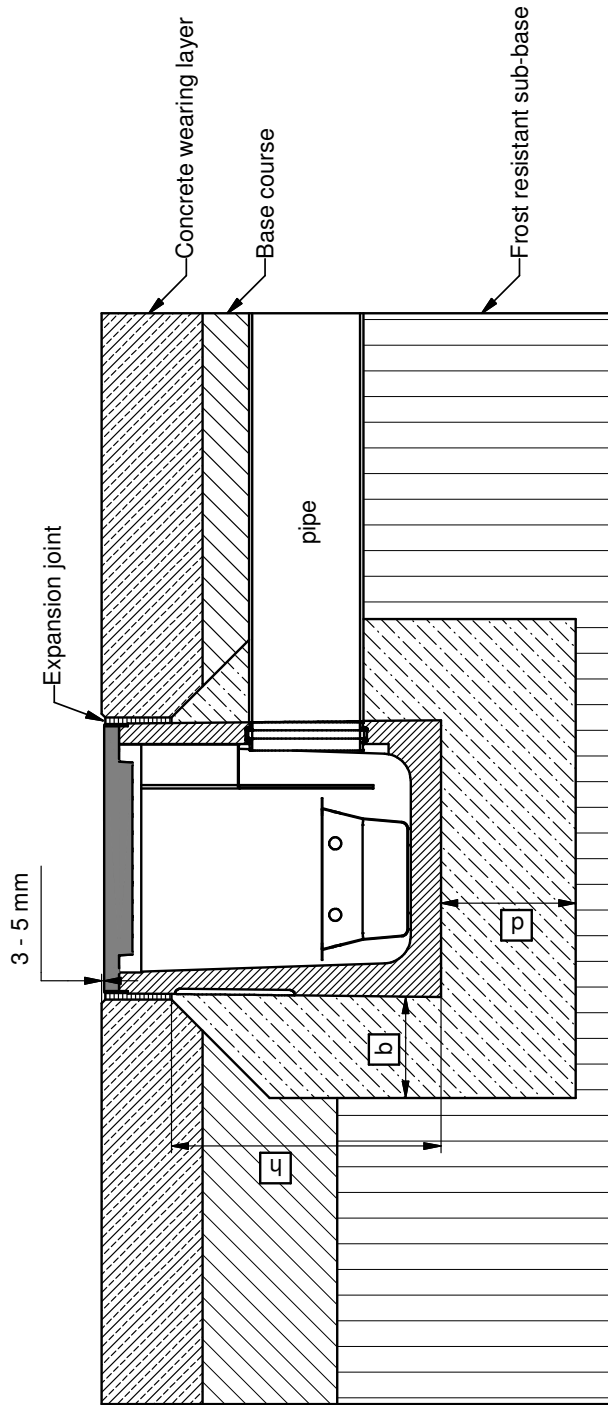
Installation example
Asphalt cl. A 15 - E 600



* h ≥ Gully height - 10 cm

Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: with b / thickness d / height h (in cm)		10 / 10 / *	10 / 10 / *	10 / 15 / *	15 / 15 / *	15 / 20 / *	
The named concrete quality is a minimum quality							
EN 206-1 / DIN 1045-2	without danger of frost on the lateral support	C 20/25	C 20/25	C 20/25	C 20/25	C 20/25	
	with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	
The installation examples / advise constantly, are adapted to the technical conditions. The conditions of the road works are not to be changed. Before planning or installation please verify the current version at www.hauraton.com		Condition: 22.02.2007					
** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC GUGBLOC		Our general installation instructions apply.					
		Surface: Asphalt					
		Werkstraße 13 76437 Rastatt Germany Tel. +49 (0) 72 22 9 58-0 Fax. +49 (0) 72 22 9 58-100 info@hauraton.com					

Installation example Concrete cl. A 15 - E 600



* $h \geq$ Gully height - 10 cm

Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: with b / thickness d / height h (in cm)		10 / 10 / *	10 / 10 / *	10 / 15 / *	10 / 15 / *	10 / 15 / *	
The named concrete quality is a minimum quality							
EN 206-1 /	without danger of frost on the lateral support	C 20/25	C 20/25	C 20/25	C 20/25	C 20/25	
DIN 1045-2	with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	
<small>The installation examples / advise constantly are adapted to the technical conditions. Before planning or installation please verify the current version at www.hauraton.com</small>							
<small>** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC GUGIBLOC</small>							
Condition: 22.02.2007				Our general installation instructions apply.			
Description: FF-POINT_SUPER-40x40 Einbau in Beton_GB				Surface: Concrete			
Drawing-no.: C:\pdmw\inventor\2007\05\10\0000014800.idw							



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FASERFIX®BIG – INSTALLATION INSTRUCTIONS

Our installation instructions / examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation.

1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions. Any expansion forces of the concrete structure must not impact on the channels.
3. Large-format paving elements in concrete in accordance with KIWA guideline BRL 2310 can be laid, with a joint, directly adjacent FASERFIX BIG channels, in accordance with BRL 2319.
4. The safety joint between the channels has to be filled with joint compound on site. For details refer to IVD guidance note no. 6.
5. The subbase for the FASERFIX BIG channels has to be sufficiently compacted to ensure that channels cannot drop or give way.
6. The joint along the steel frame of the FASERFIX BIG channel does not have to be sealed to be leakproof. This joint just requires a simple grouting compound that is resistant to mineral oil.

These installation instructions apply similarly to inlet boxes.

INSTALLATION INSTRUCTIONS FOR SEALING JOINTS IN CONNECTION WITH FASERFIX BIG CHANNELS IN ACCORDANCE WITH DIN EN 1433

Area of application:

For permanently elastic connection points in cross joints of FASERFIX BIG channels to meet the requirements of DIN EN 1433. For use internally and externally as well as for sealing face walls, gullies and the joints with the adjoining surface finishes along the channels.

Substrate conditions:

The surfaces to be bonded have to be sufficiently firm, dry, clean and free from oil and grease to ensure that bonding and curing is not adversely affected. Where these conditions are in question, it is possible to apply a priming coat to the contact surfaces. To bridge the gap between the channel joints before applying a permanently elastic joint filler attach a selfadhesive masking tape or installation tape. This will prevent the joint sealer to bond with the floor of the joint. In the case of cut cross joints, insert a round closed-cell PE cord between the flanks of the joint.

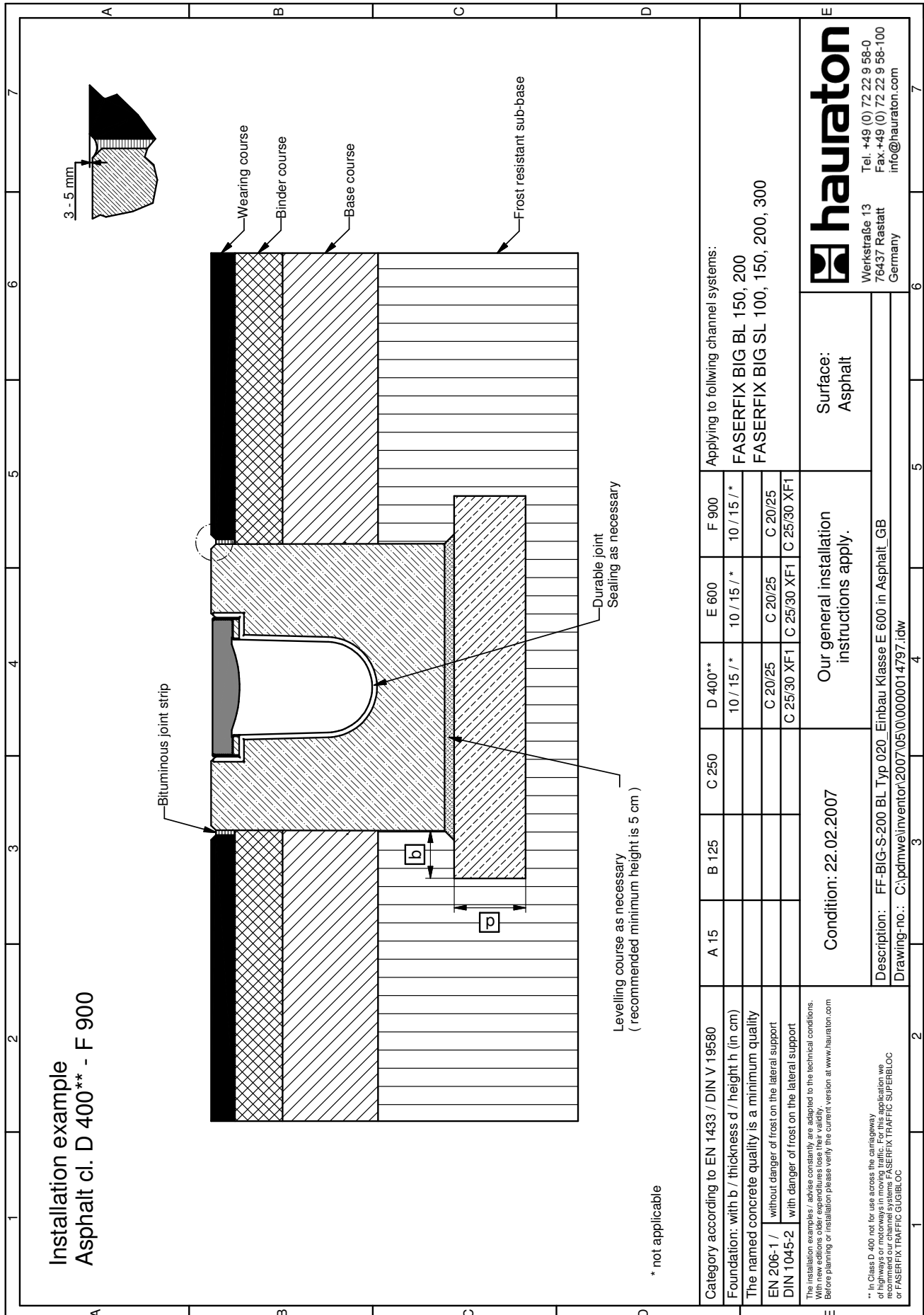
Installation instructions for joint sealers in cross joints:

The filling of the joints has to ensure that the joint sealer can absorb any potential movements (i.e. bonding on both flanks of the joint). When sealing the walls of FASERFIX BIG, a small rubber hose on the hand gun will facilitate work to the wall joints. Once the joint has been filled with a sealer, use a smoothing spatula to level the surface of the joint. Finally, use a soap solution to smooth off the surface of the joint. Where required, a joint can be made between the end of the cross joint and the joint with the surface covering along the channel.

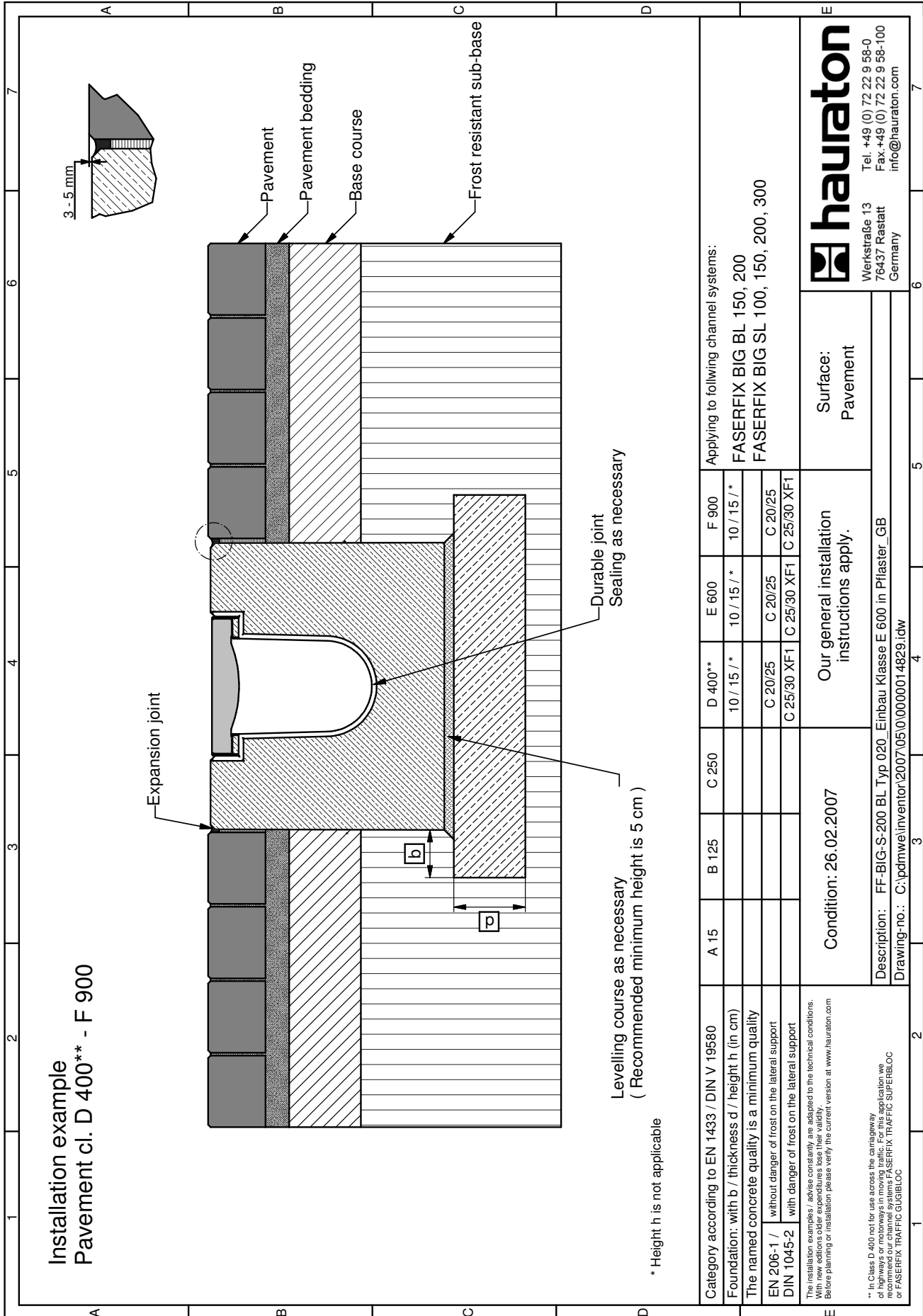
INSTALLATION INSTRUCTIONS FOR SEALING FACE WALLS AND GULLIES:

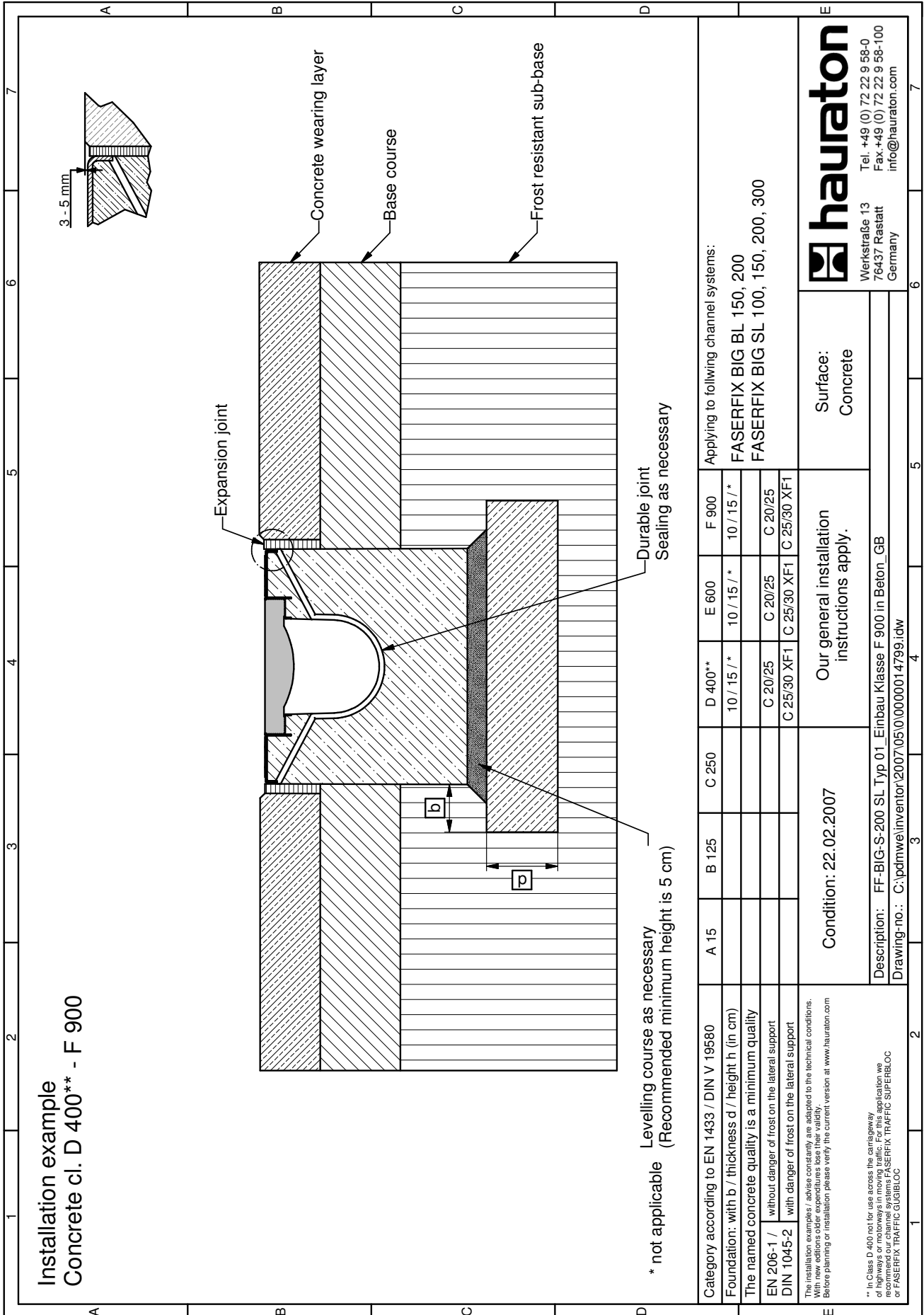
Clean the face wall surfaces and apply the permanently elastic sealing compound with a cross section of 6 x 15 mm around the periphery. Then compress the joint to a minimum thickness of 2 mm and hold in that position for 24 hours. Any sealing compound squeezing out at the edges should be smoothed off as described above. When sealing the joints with sink boxes, proceed in a similar way with the respective contact surfaces. The components are sufficiently heavy to hold the joints in place. Surfaces regulated by the WHG (Water Resources Act) are subject to special requirements. For further information please contact us.

Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07



FASERFIX®BIG





RECYFIX® SUPER KS / RECYFIX® SUPER, RECYFIX® PLUS X - INSTALLATION INSTRUCTIONS

Our installation instructions / examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation. Additional requirements must be met when the products are installed at petrol stations / tank installations. For more detailed information please contact the manufacturer.

1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.
3. The rigidity of the side walls of the RECYFIX SUPER channel body ensures that the dynamic forces created during the correct installation of adjoining concrete, asphalt or paving areas will not cause any damage. No additional reinforcements are required.
4. When the products are installed in paved or slabcovered surfaces, the joint along the channels should be filled with a mineral or bituminous compound. Installation in areas exposed to heavy loads, from category D 400: any dynamic thrust forces acting on the paving must not impact directly on the side walls of the channels but have to be transferred to the backing structure through direct contact, e.g. by installing the first 3 rows in a modified concrete bedding.
5. Where it is possible that extreme thrust forces occur, e.g. where there are significant gradients, special additional installation details are required by the installer. For further information please contact us.
6. Any safety joints installed in accordance with EN 1433 can be filled up to the top edge of the surfacing, if required. Similarly, these instructions apply to gullies and points of entry. Where the channels are to be installed in paved areas with load classes D 400 to F 900, e.g. in air strips, logistic centres, container terminals, bus stations etc., the channel backing has

to be increased and raised to the surface in the form of an insitu concrete casing along the channel, with concrete quality at least C 30/37 X F4. The concrete casing should permanently stand up from the top edge of the channel by 3 to 5 mm. Where required, installers may opt to reinforce the concrete casing with reinforcement steel.

INSTALLATION INSTRUCTIONS FOR SEALING JOINTS IN CONNECTION WITH FASERFIX SUPER CHANNELS IN ACCORDANCE WITH DIN EN 1433

Area of application:

For permanently elastic connection points in cross joints of RECYFIX SUPER channels to meet the requirements of DIN EN 1433. For use internally and externally as well as for sealing face walls, gullies and the joints with the adjoining surface finishes along the channels.

Substrate conditions:

The surfaces to be bonded have to be sufficiently firm, dry, clean and free from oil and grease to ensure that bonding and curing is not adversely affected. Where these conditions are in question, it is possible to apply a priming coat to the contact surfaces. To bridge the gap between the channel joints before applying a permanently elastic joint filler, attach a selfadhesive masking tape or installation tape. This will prevent the joint sealer to bond with the floor of the joint. In the case of cut cross joints, insert a round closedcell PE cord between the flanks of the joint.

Installation instructions for joint sealers in cross joints:

The filling of the joints has to ensure that the joint sealer can absorb any potential movements (i.e. bonding on both flanks of the joint). Once the joint has been filled with a sealer, use a smoothing compound to level the surface of the joint. Finally, use a soap solution to smooth off the surface of the joint. Where required, a joint can be made between the end of the cross joint and the joint with the surface covering along the channel.

INSTALLATION INSTRUCTIONS FOR SEALING FACE WALLS AND TRASH BOXES:

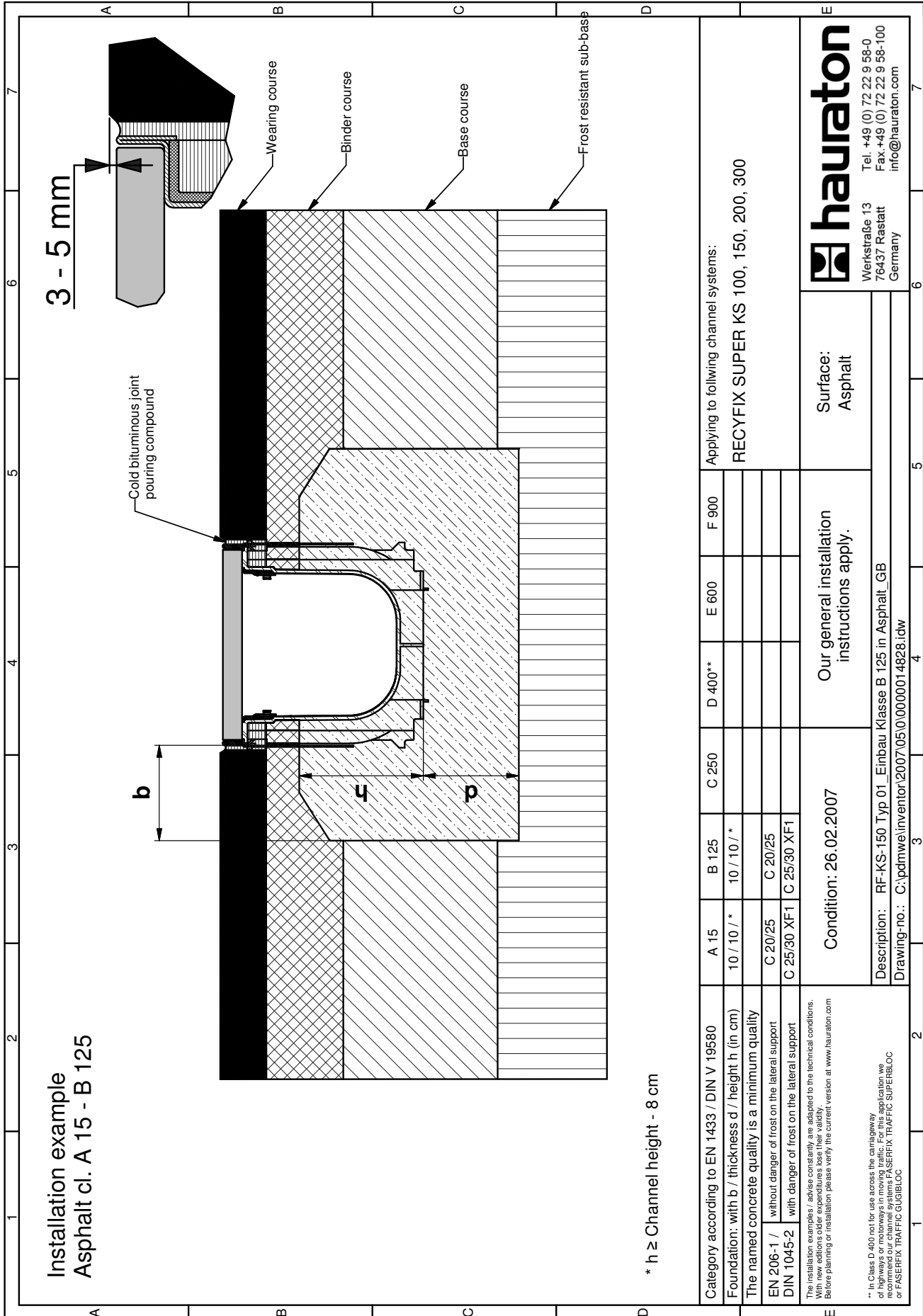
Clean the face wall surfaces and apply the permanently elastic sealing compound with a cross section of 6 x 15 mm around the periphery. Then compress the joint to a minimum thickness of 2 mm and hold in that position for 24 hours. Any sealing compound squeezing out at the edges should be smoothed off as described above.

When sealing the joints with trash boxes, proceed in a similar way with the respective contact surfaces. The components are sufficiently heavy to hold the joints in place. Surfaces regulated by the WHG (Water Resources Act) are subject to special requirements. For further information please contact us.

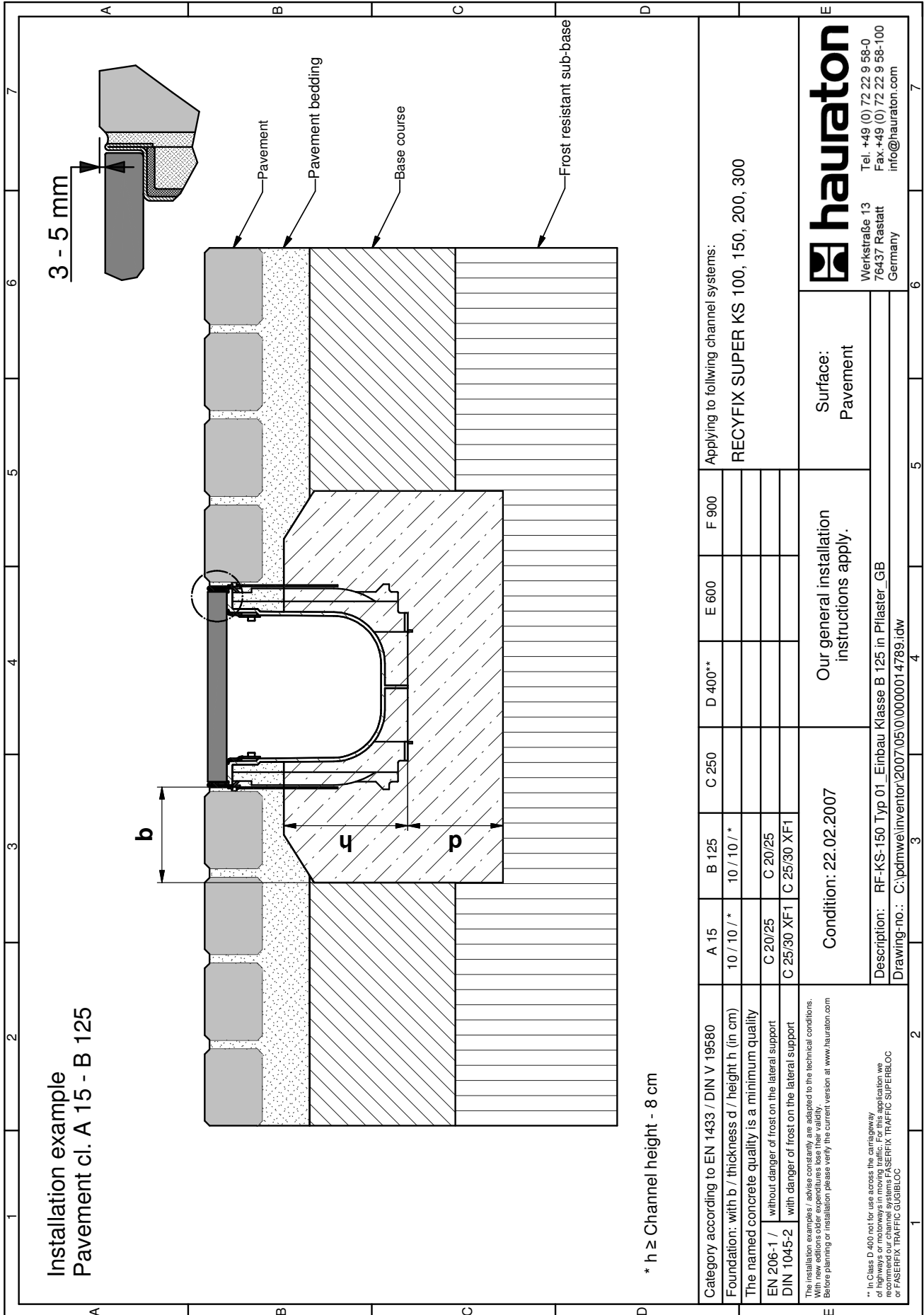
Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

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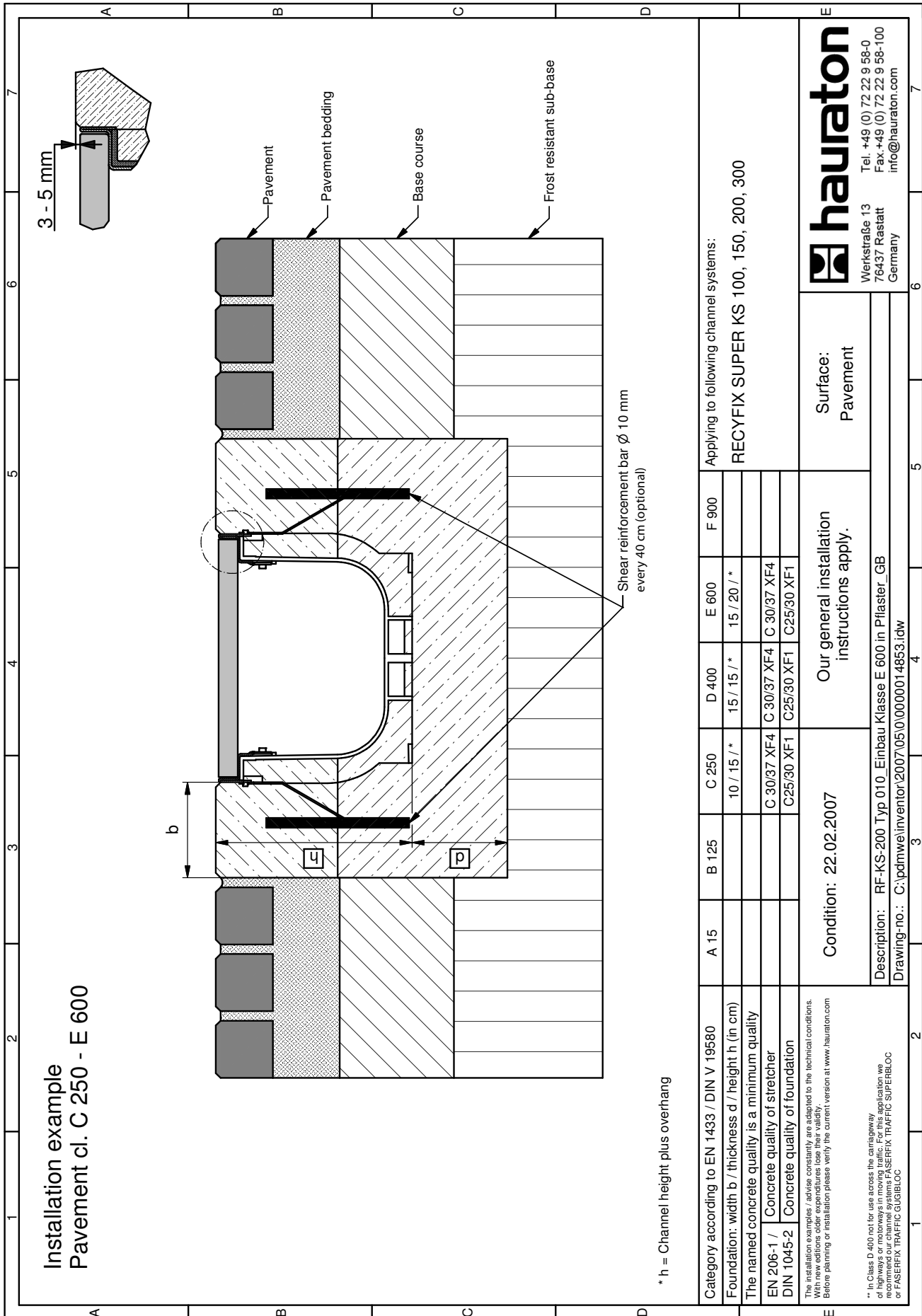
RECYFIX®SUPER KS



RECYFIX®SUPER KS



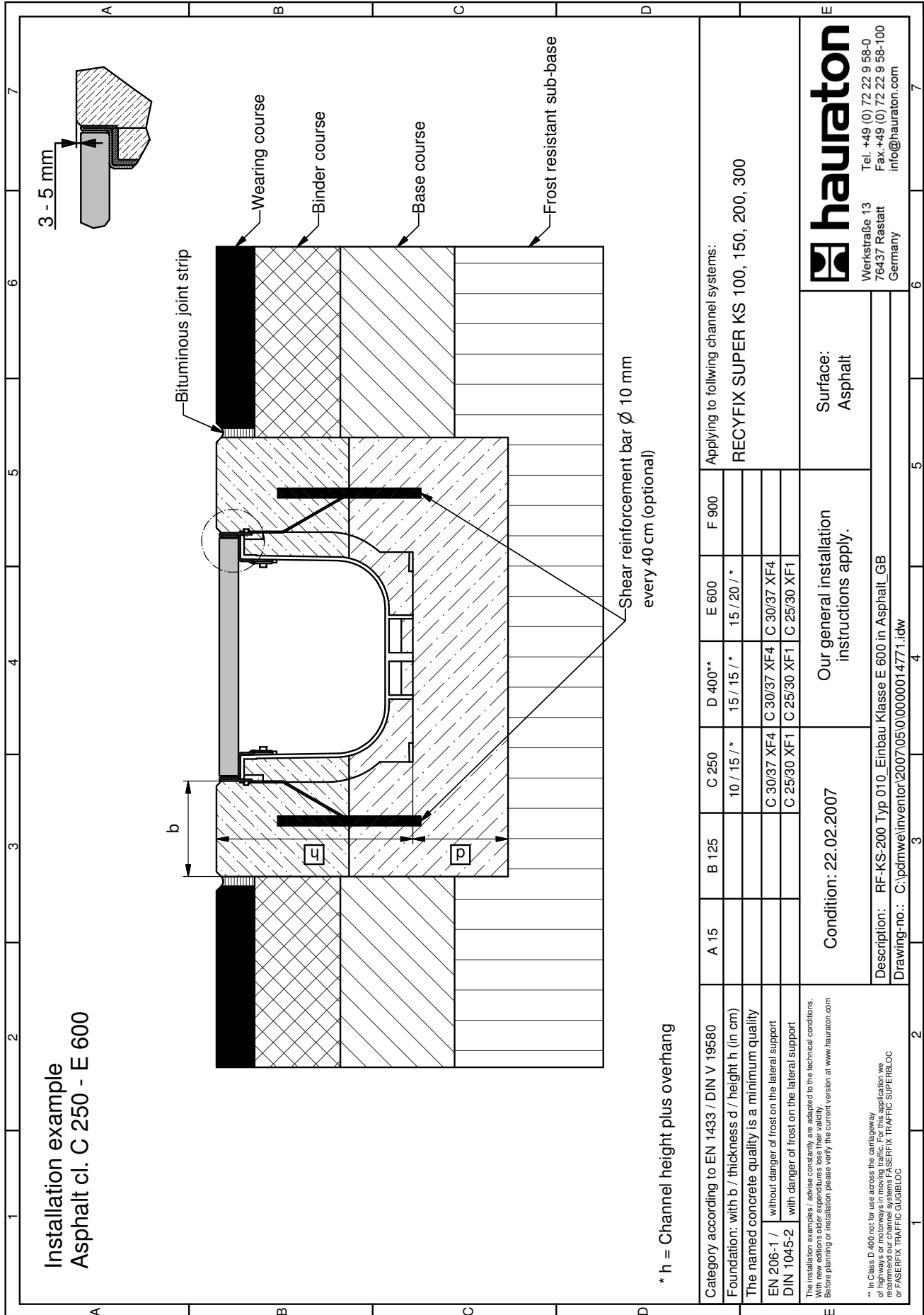
RECYFIX®SUPER KS



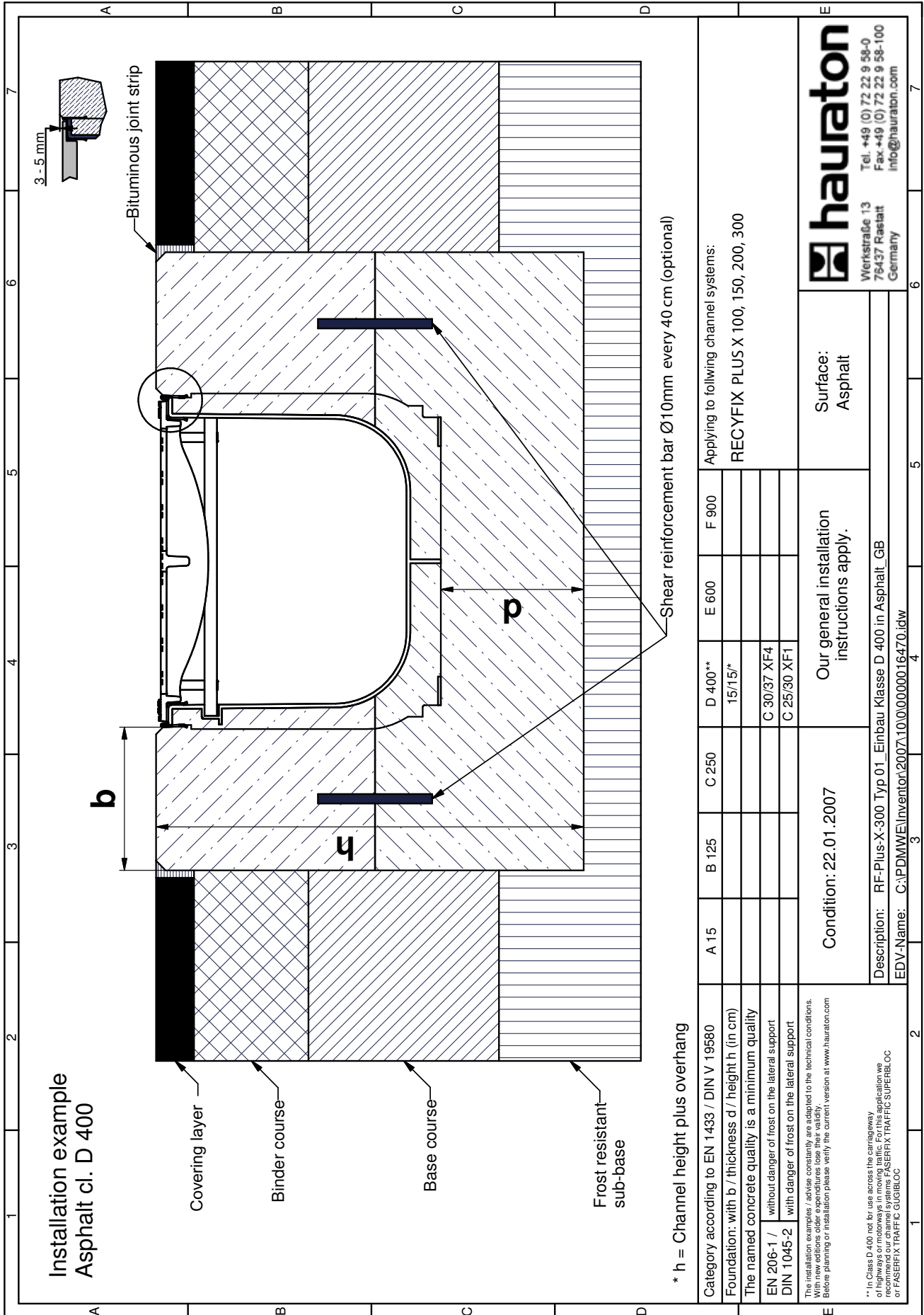
* h = Channel height plus overhang

The installation examples / advice constantly are adapted to the technical conditions of highways or motorways in moving traffic. For this application we recommend our channel systems FASEFIX TRAFFIC SUPERBLOC or FASEFIX TRAFFIC GUGIBLOC

** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASEFIX TRAFFIC SUPERBLOC or FASEFIX TRAFFIC GUGIBLOC



RECYFIX® PLUS X



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RECYFIX® PLUS X

**Installation example
Concrete cl. D 400**

Concrete wearing layer

Base course

Frost resistant sub-base

Expansion joint

3 - 5 mm

b

h

p

Shear reinforcement bar Ø10mm every 40 cm (optional)

* h = Channel height plus overhang

Category according to EN 1433 / DIN V 19580	A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: with b / thickness d / height h (in cm)				15/15/*		
The named concrete quality is a minimum quality						
EN 206-1 / without danger of frost on the lateral support				C 30/37 XF4		
DIN 1045-2 with danger of frost on the lateral support				C 25/30 XF1		

Applying to following channel systems:
Concrete
RECYFIX PLUS X 100, 150, 200, 300

Condition: 24.04.2007

Our general installation instructions apply.

Surface: Concrete

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75437 Rastatt
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Fax +49 (0) 72 22 9 58-100
info@hauraton.com

Description: RF-Plus-X-300 Typ 01_Einbau Klasse D 400 in Beton_GB
EDV-Name: C:\PDMWE\Inventor\2007\10\0\0000016471.idw

FASERFIX® TRAFFIC SUPERBLOC – INSTALLATION INSTRUCTIONS

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation.

1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.
3. The sides of the channel bodies are sufficiently strong to ensure that they will not be damaged by the impact of dynamic forces applied during appropriate concreting, asphaltting or paving of adjacent areas.

4. Where the channels are installed in paved/slab-covered areas, the joints along the channels have to be filled with a mineral or bituminous compound.
5. Where it is possible that extreme thrust forces occur, e.g. where there are significant gradients, special additional installation details are required by the installer. For further information please contact us.

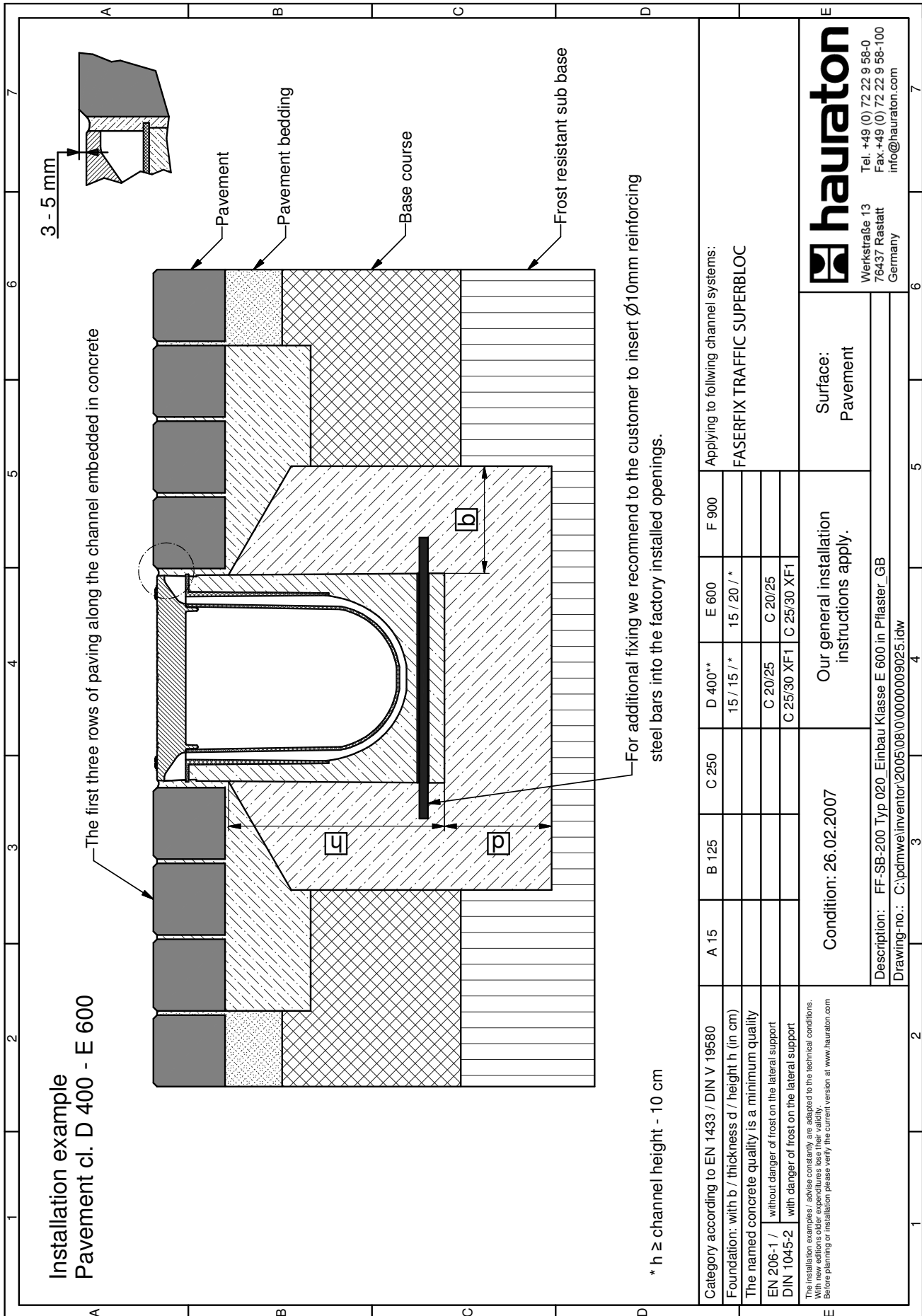
SEALING CHANNELS IN ACCORDANCE WITH DIN EN 1433

During installation it is possible to seal joints in accordance with EN 1433. Please contact us to obtain sealing instructions.

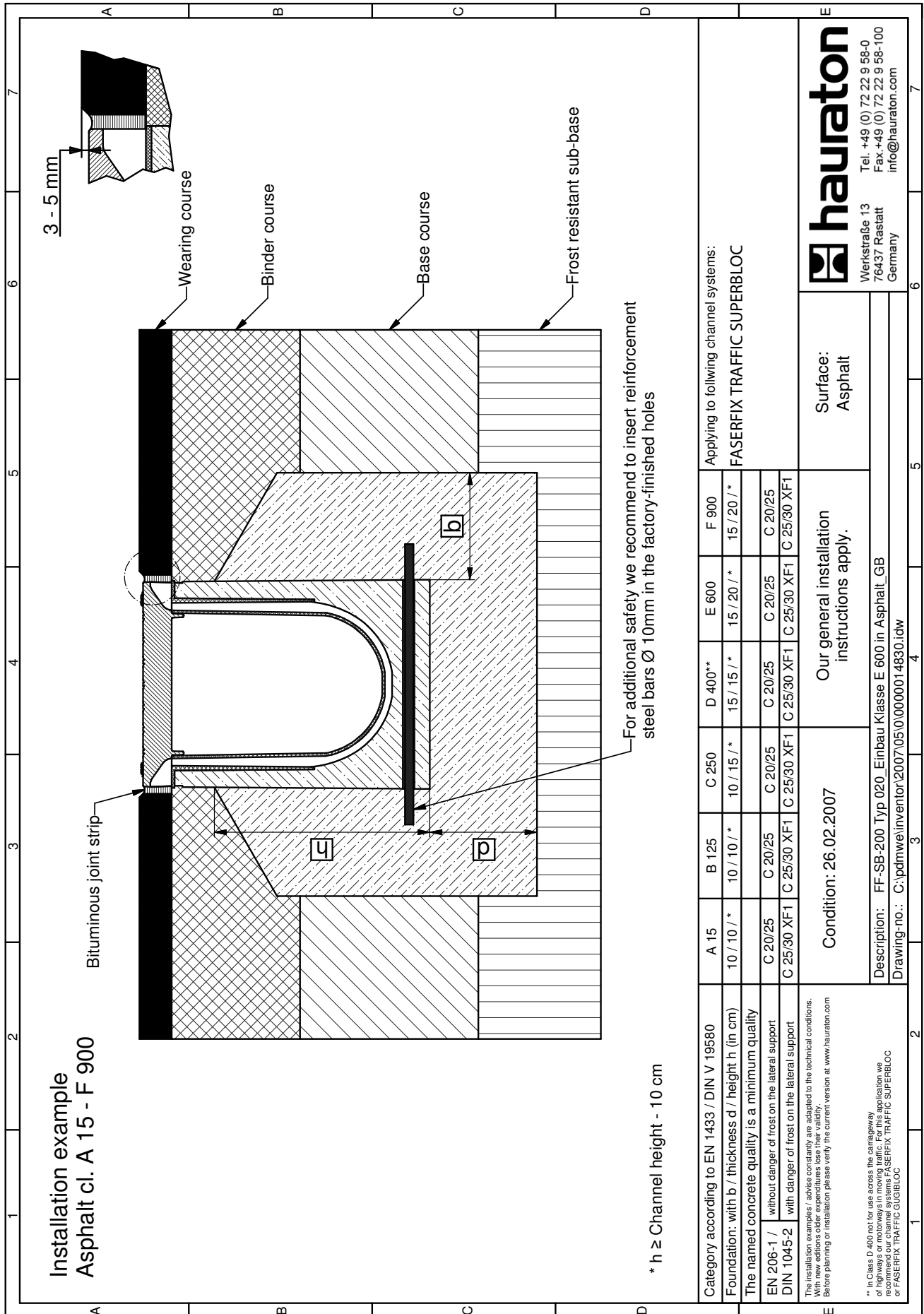
Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

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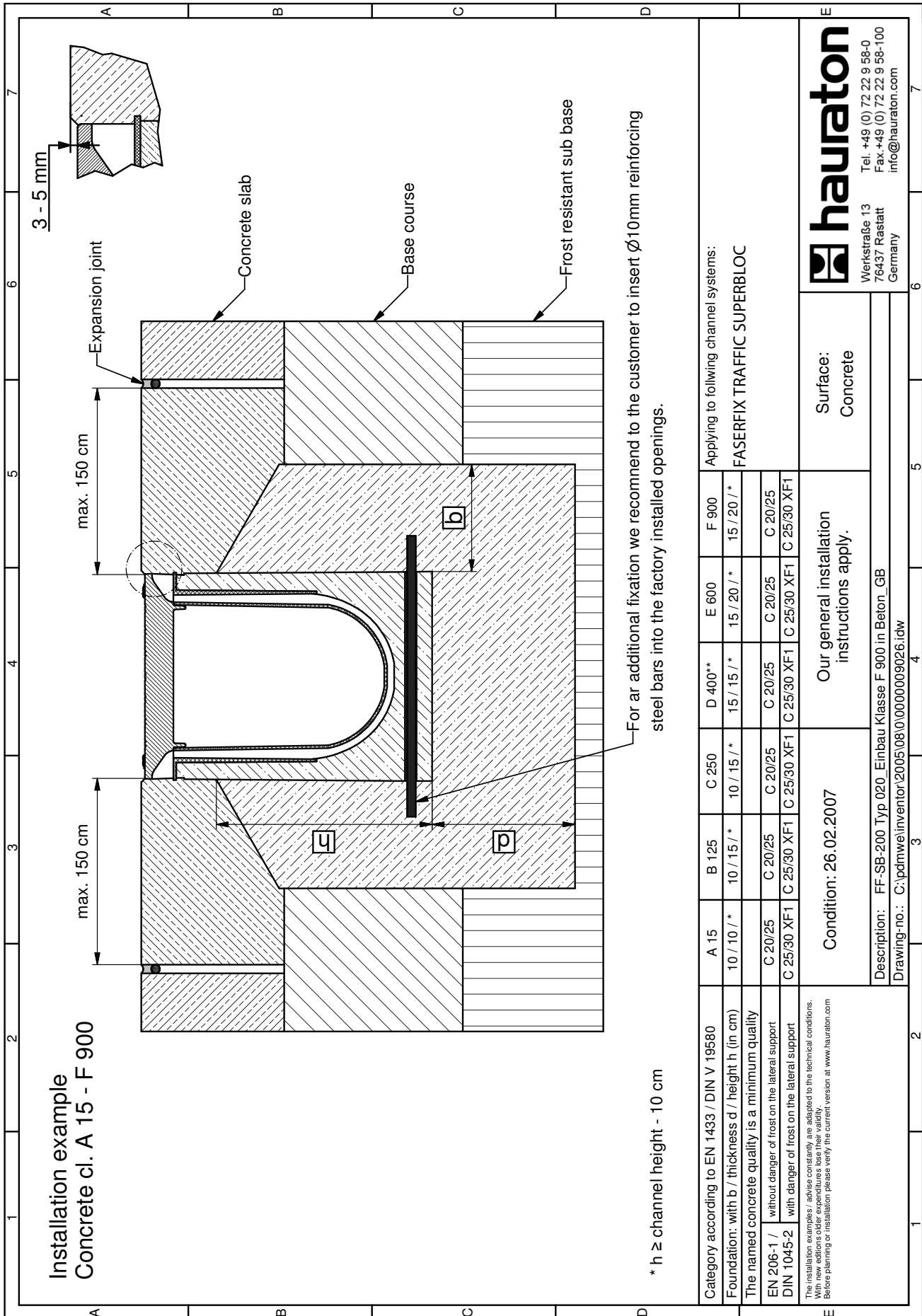
FASERFIX®TRAFFIC SUPERBLOC

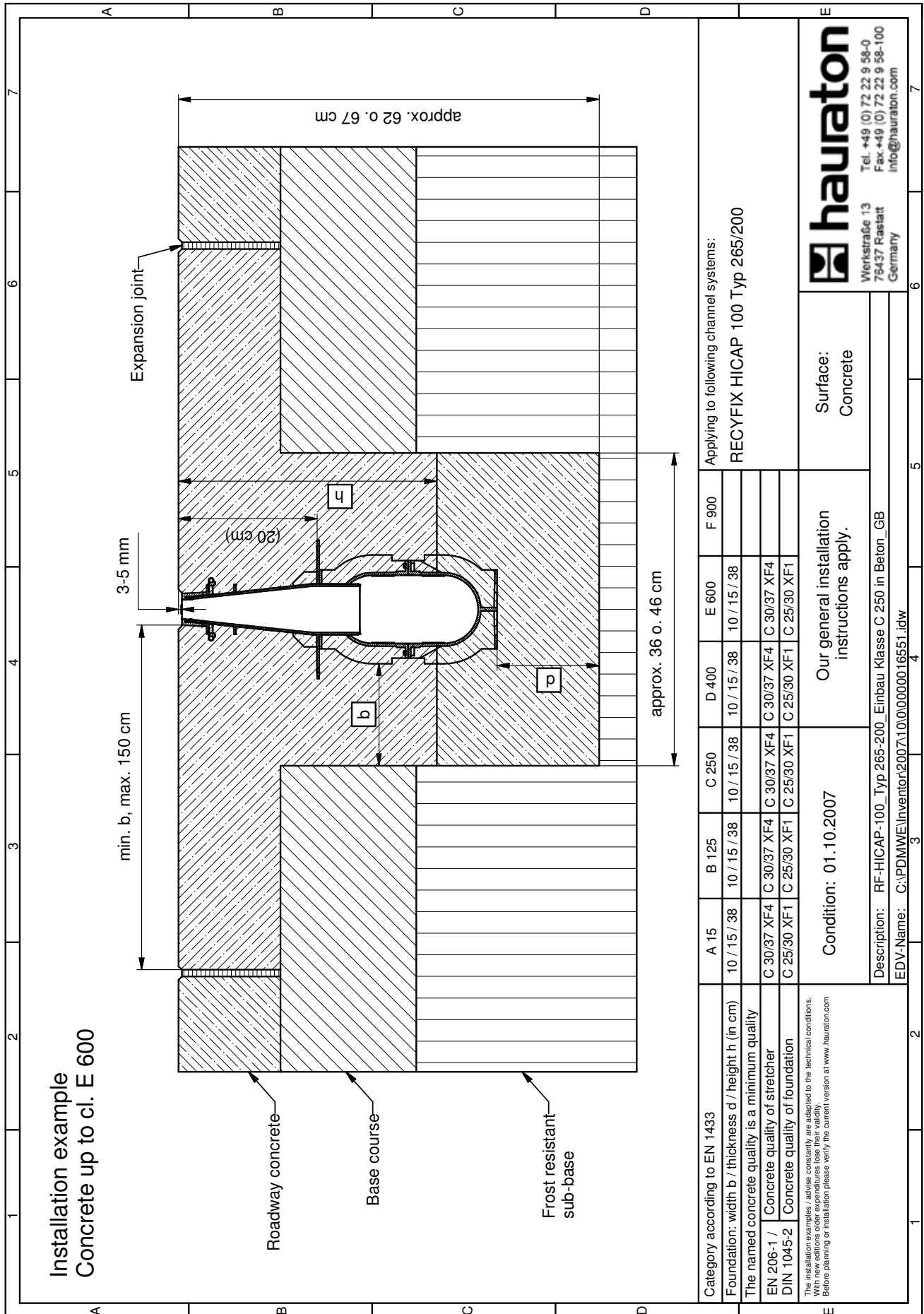


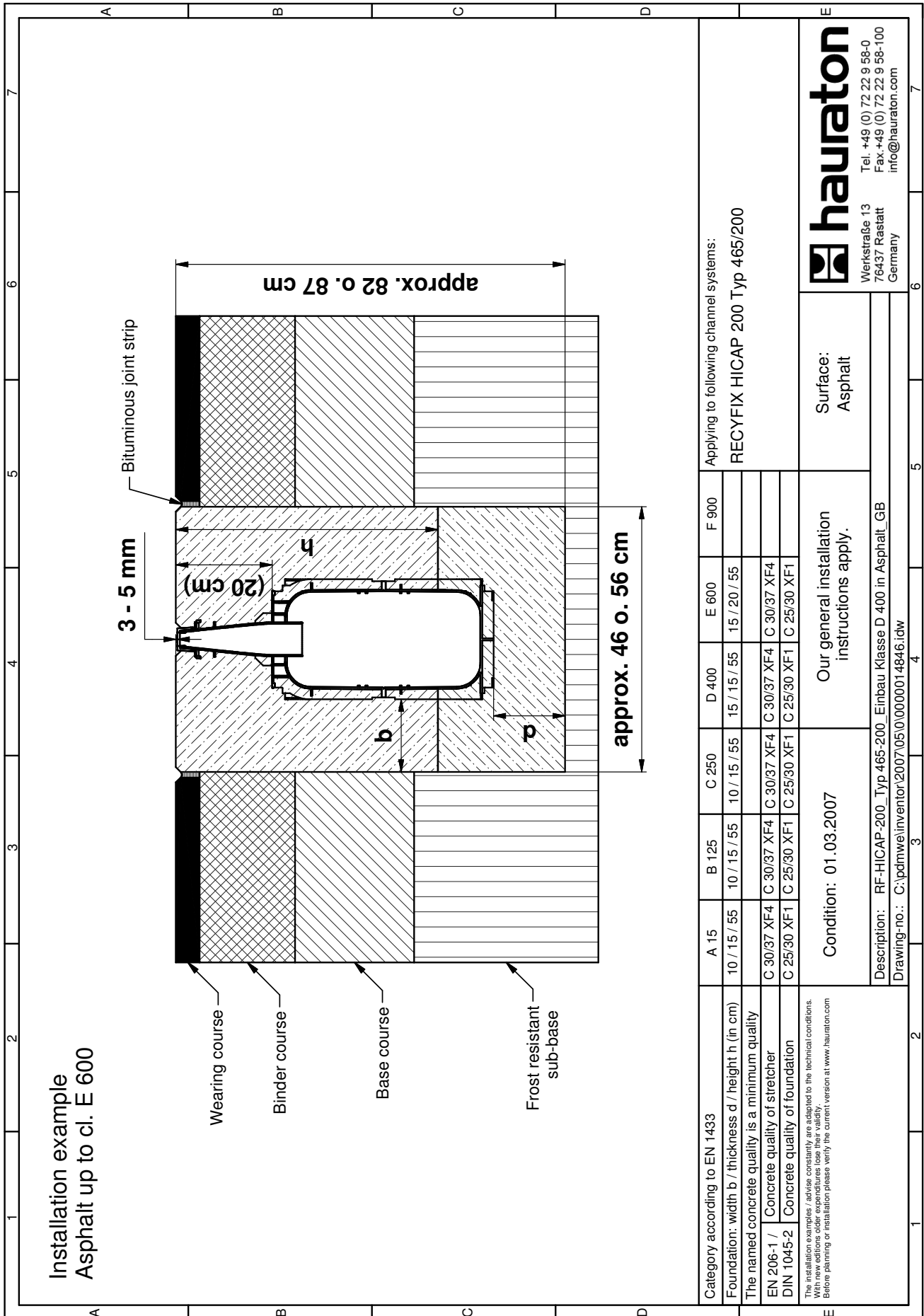
FASERFIX®TRAFFIC SUPERBLOC



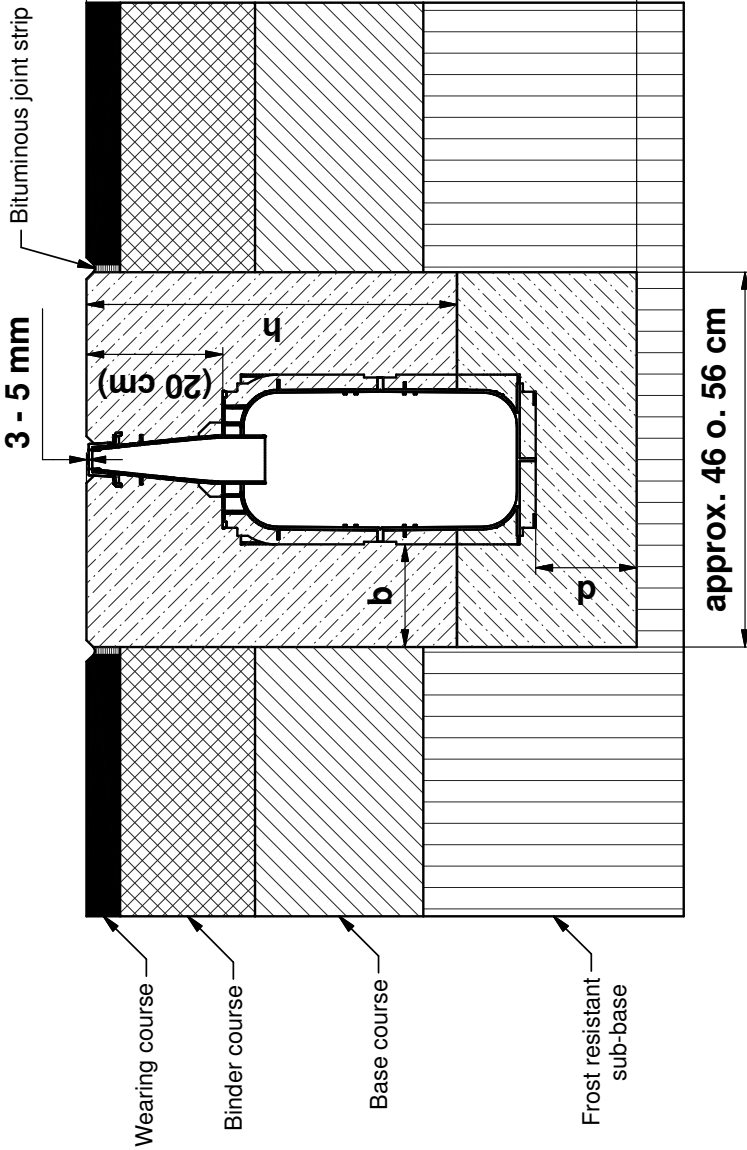
FASERFIX®TRAFFIC SUPERBLOC



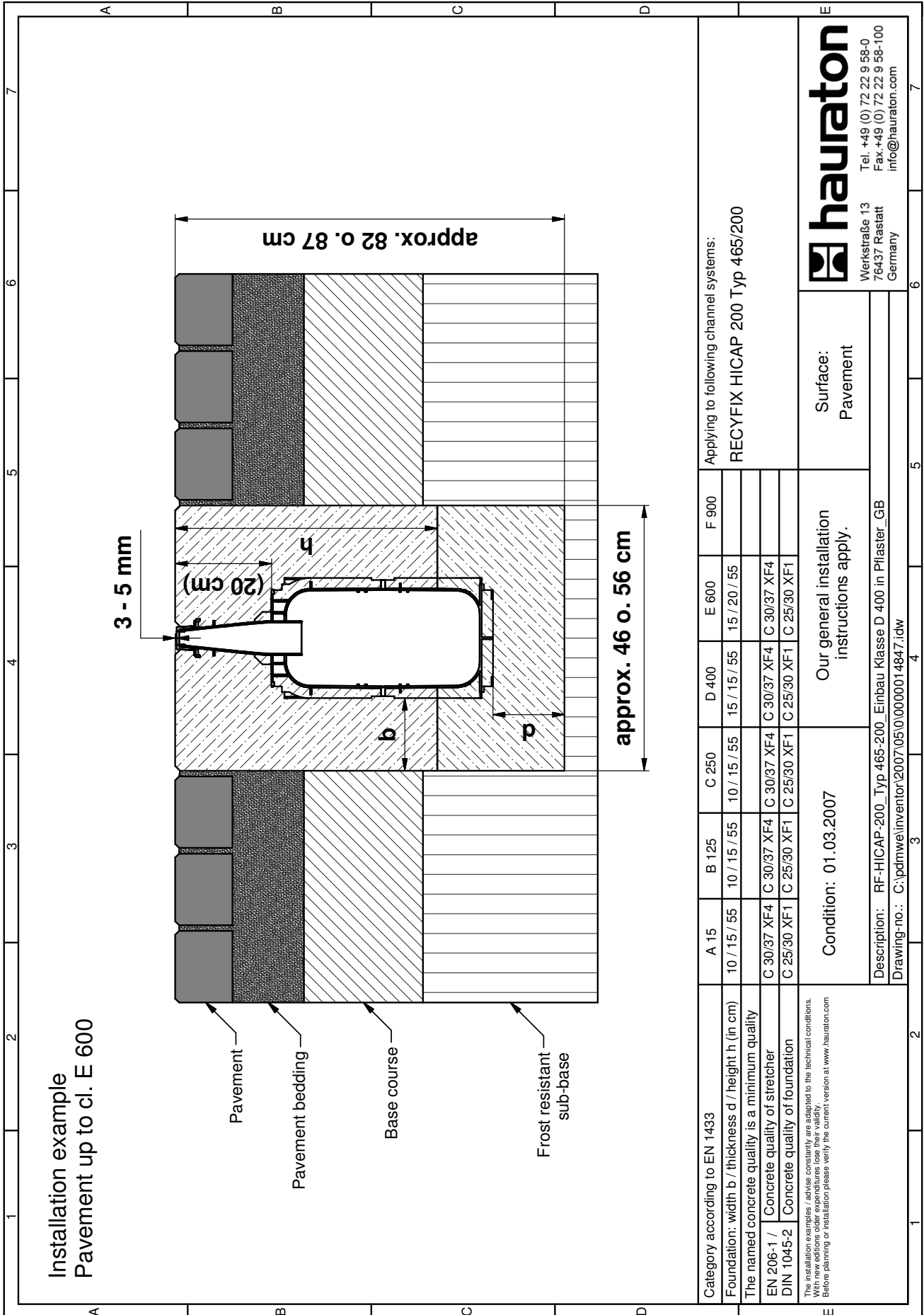


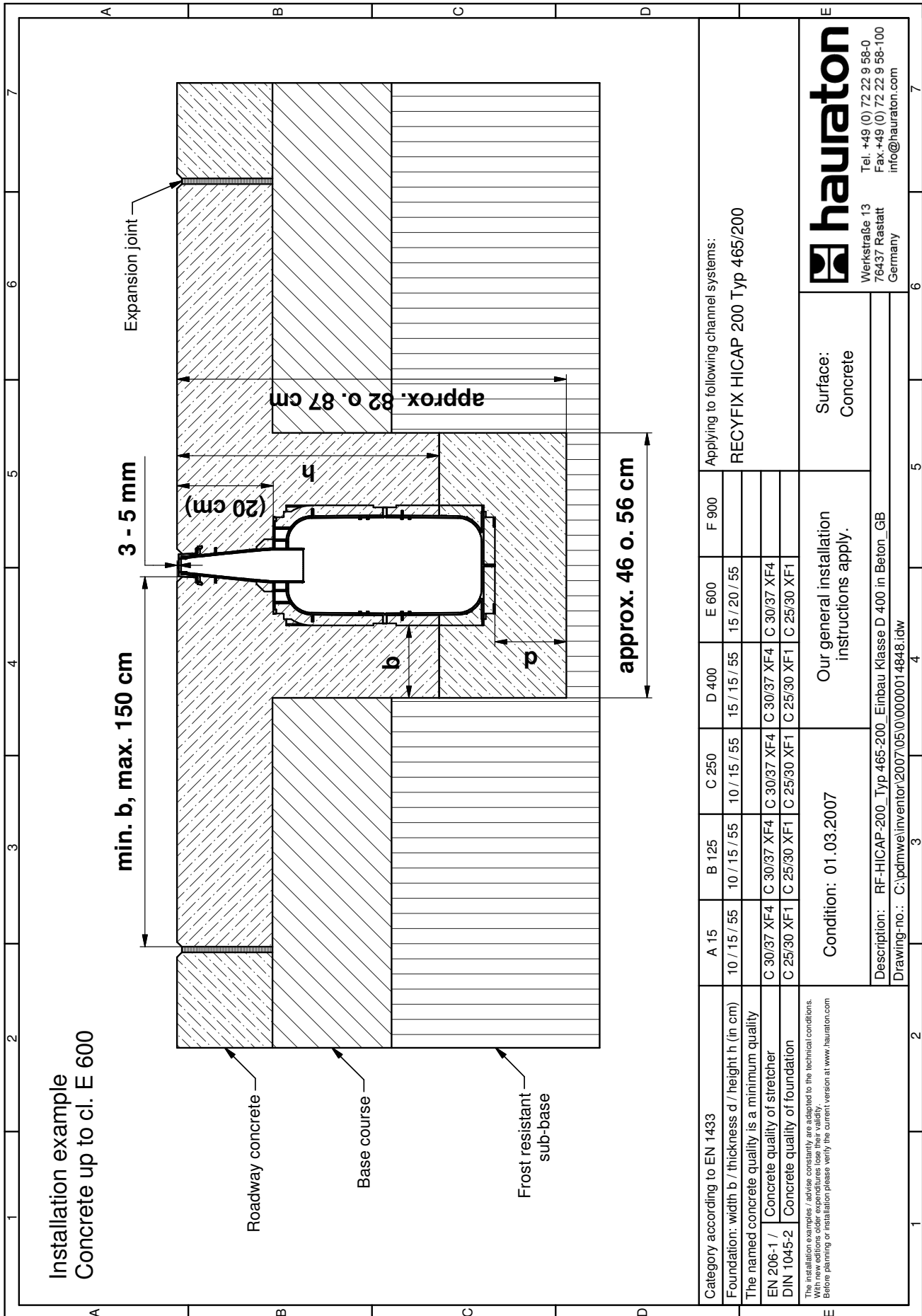


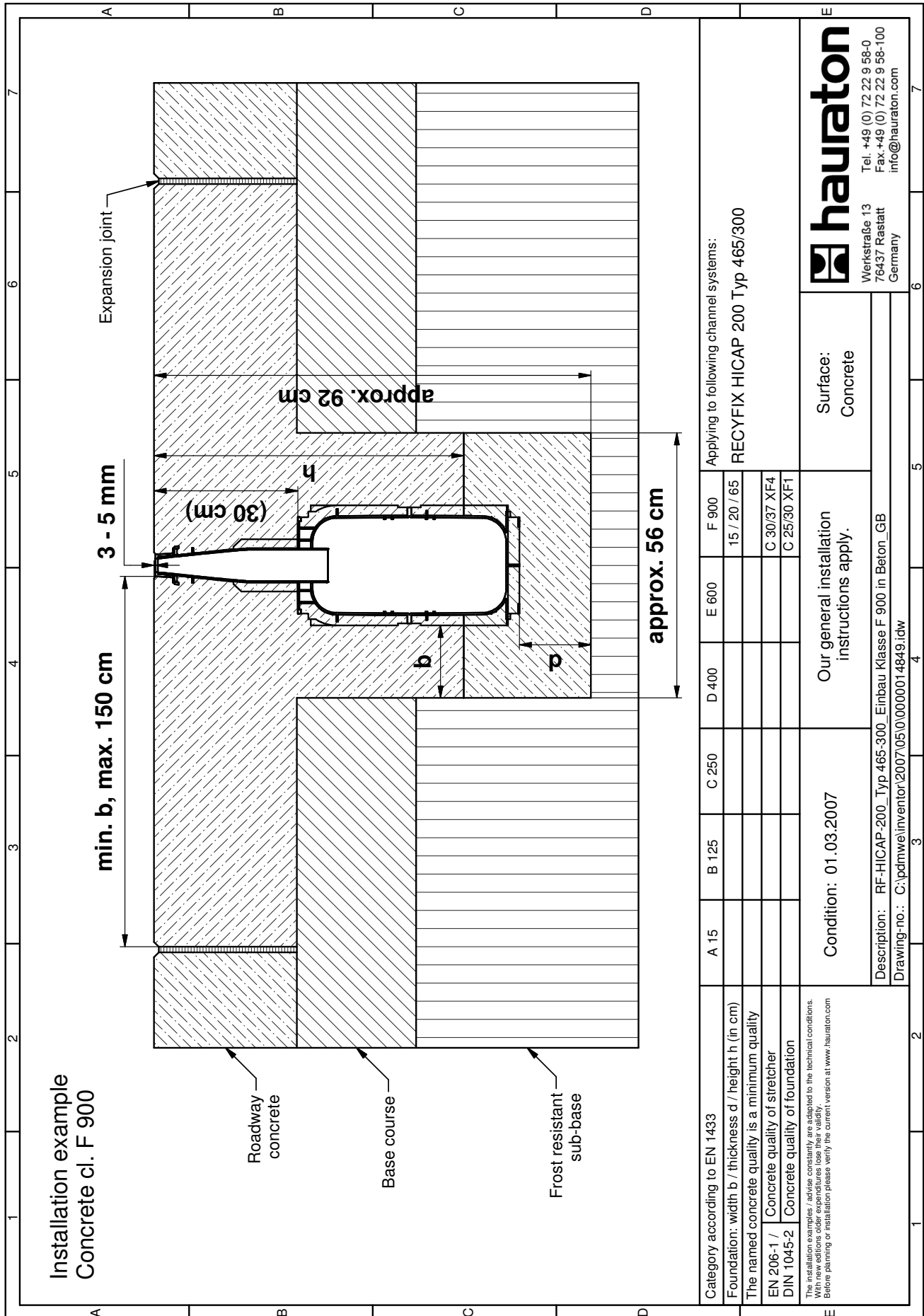
Installation example
Asphalt up to cl. E 600



Category according to EN 1433	A 15	B 125	C 250	D 400	E 600	F 900	Applying to following channel systems:
Foundation: width b / thickness d / height h (in cm)	10 / 15 / 55	10 / 15 / 55	10 / 15 / 55	15 / 15 / 55	15 / 20 / 55		RECYFIX HICAP 200 Typ 465/200
The named concrete quality is a minimum quality							
EN 206-1 / Concrete quality of stretcher	C 30/37 XF4	C 30/37 XF4	C 30/37 XF4	C 30/37 XF4	C 30/37 XF4		
DIN 1045-2 Concrete quality of foundation	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1	C 25/30 XF1		
The installation examples / advise necessarily are adapted to the technical conditions. Before planning or installation please verify the current version at www.hauraton.com	Condition: 01.03.2007						Surface: Asphalt
Description: RF-HICAP-200_Typ 465-200_Einbau Klasse D 400 in Asphalt_GB							<p>hauraton Werkstraße 13 76437 Rastatt Germany Tel. +49 (0) 72 22 9 58-0 Fax. +49 (0) 72 22 9 58-100 info@hauraton.com</p>
Drawing-no.: C:\pdmw\inventor\2007\05\10\0000014846.idw							







RECYFIX®PLUS / RECYFIX®STANDARD – INSTALLATION INSTRUCTIONS

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer.

Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation.

1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Dig a trench and set the outlet for connecting to the ground drainage pipe. First set the inlet box or the first channel directly adjacent to the ground drainage pipe and join them up.
Join up the next channel elements using the tongue and groove joint in the units. Make sure to observe the direction of the arrow on the channels.
3. Place the end cap and keep the grating inserted for reinforcement. Prepare the lateral concrete bearing. Please consider therefore the information on the installation drawings depending on the installation situation and the required load class.

4. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.
5. Where the products are installed in paved surfaces, the joint along the channels should be filled with paving gravel or bitumen compound.

These installation instructions apply similarly to inlet boxes.

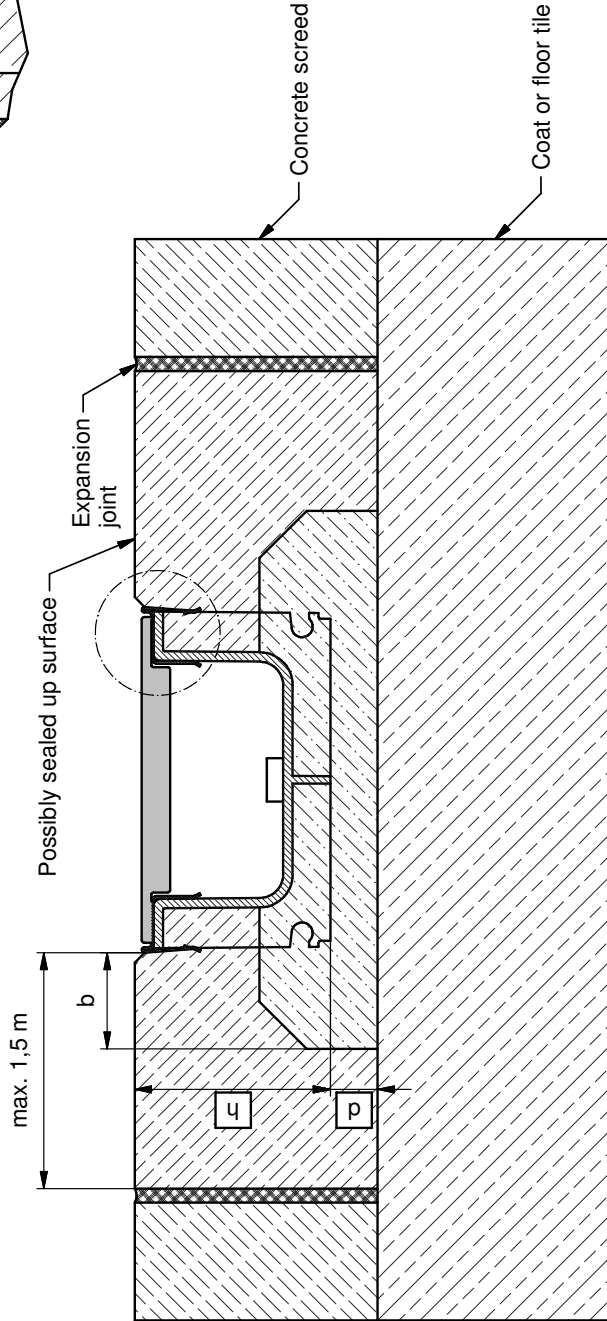
Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

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RECYFIX®PLUS/RECYFIX®STANDARD

Installation example
Concrete screed cl. A 15 - B 125

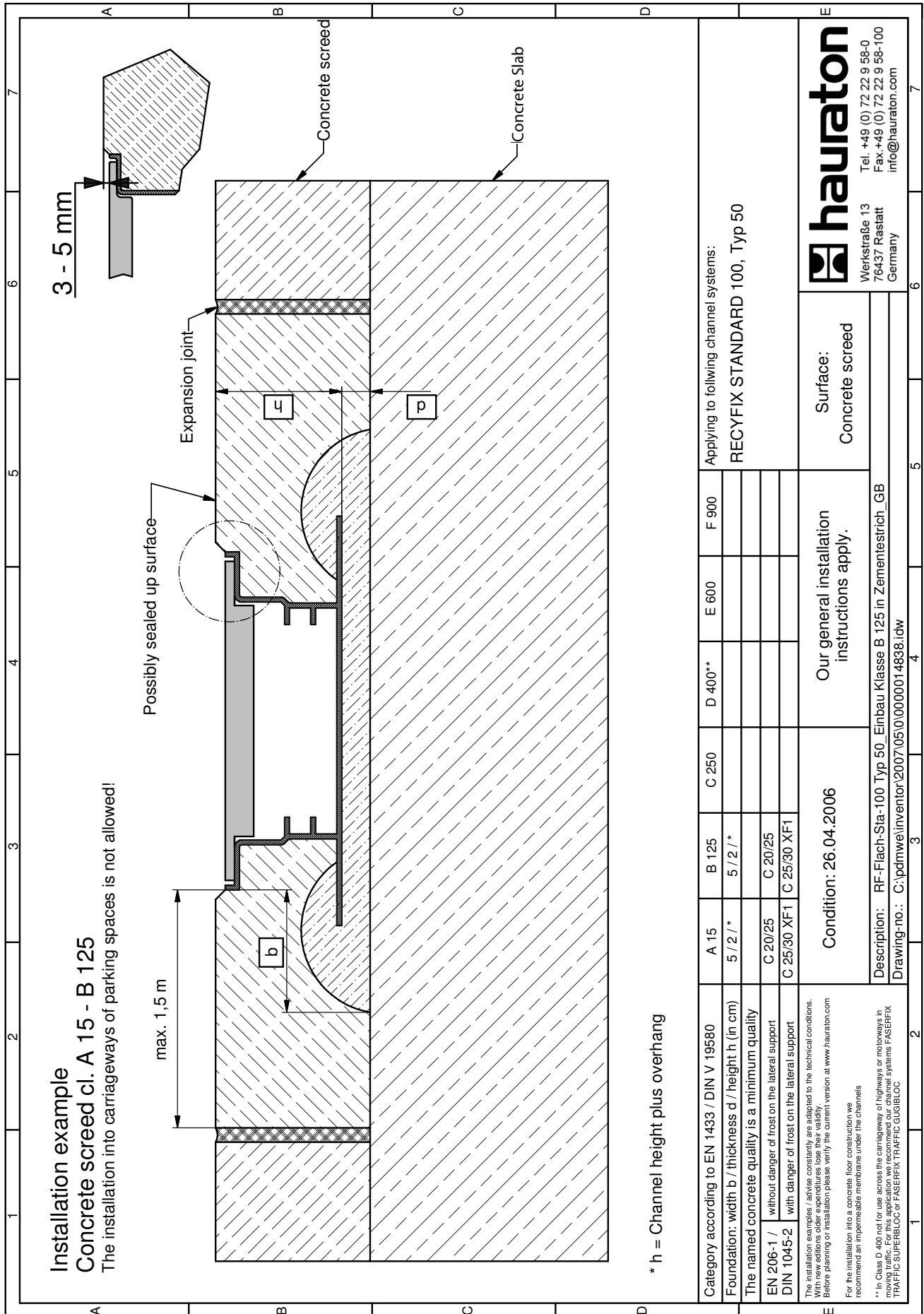
The installation into carriageways of parking spaces is not allowed!



* h = Channel height plus overhang

Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: width b / thickness d / height h (in cm)		5 / 2 / *	5 / 2 / *				
The named concrete quality is a minimum quality							
EN 206-1 /	without danger of frost on the lateral support	C 20/25	C 20/25				
DIN 1045-2	with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1				
The installation examples / advise constantly are adapted to the technical conditions. The new editions shall be applied as they appear. Before planning or installation please verify the current version at www.hauraton.com		Condition: 12.03.2007		Our general installation instructions apply.			
For the installation into a concrete floor construction we recommend an impermeable membrane under the channels		Description: RF-Plus-100 Typ 80 Einbau PKW befahrbar in Zementestrich_GB		Surface: Concrete screed			
** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERLOC or FASERFIX TRAFFIC GUGIBLOC		Drawing-no.: C:\pdm\winventor\2007\05\10\00001\484\1.idw					
		Tel. +49 (0) 72 22 9 58-0		Tel. +49 (0) 72 22 9 58-0			
		Fax. +49 (0) 72 22 9 58-100		Fax. +49 (0) 72 22 9 58-100			
		Germany		info@hauraton.com			

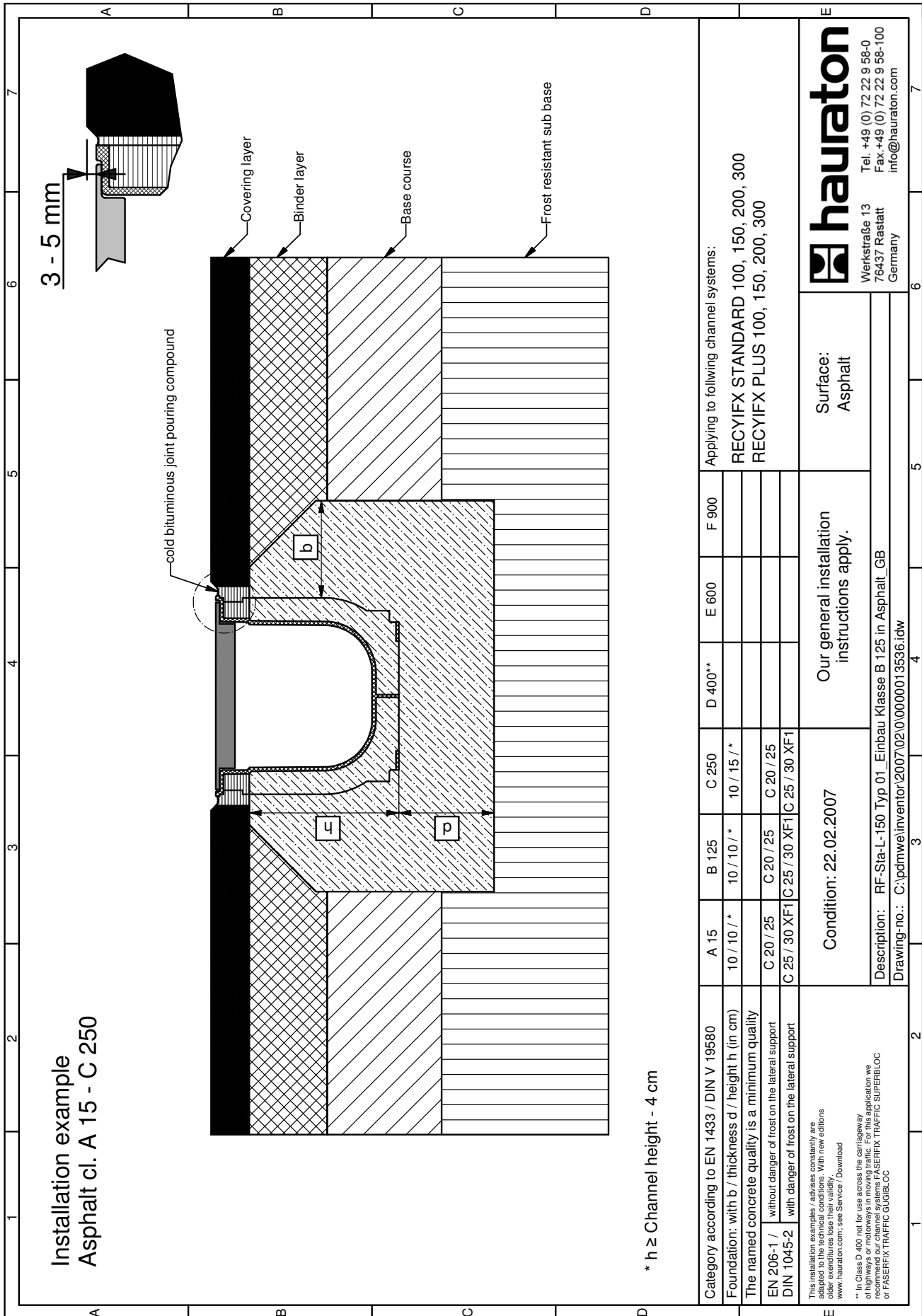
RECYFIX®STANDARD



Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: width b / thickness d / height h (in cm)		5 / 2 / *					
The named concrete quality is a minimum quality							
EN 206-1 /	without danger of frost on the lateral support	C 20/25	C 20/25				
DIN 1045-2	with danger of frost on the lateral support	C 25/30 XF1	C 25/30 XF1				
<small>The installation examples / advice constantly are adapted to the technical conditions. Before planning or installation please verify the current version at www.hauraton.com. For the installation into a concrete floor construction we recommend an impermeable membrane under the channels</small> <small>** in Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFIC SUPERLOC or FASERFIX TRAFIC GÜBBLÖC</small>							
Condition: 26.04.2006		Our general installation instructions apply.			Surface: Concrete screed		
Description: RF-Flach-Sta-100 Typ 50 Einbau Klasse B 125 in Zementestrich_GB		Drawing-no.: C:\pdmwe\inventor\2007\05\10\000014838.idw					

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RECYFIX®PLUS/RECYFIX®STANDARD



RECYFIX®PLUS/RECYFIX®STANDARD

1234567

ABCD

1234567

ABCD

E67

Installation example
Concrete cl. A 15 - C 250

* h = Channel height plus overhang

Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400	E 600	F 900	Applying to following channel systems:	
Foundation: width b / thickness d / height h (in cm)		10 / 10 / *	10 / 10 / *	10 / 15 / *				RECYFIX STANDARD 100, 150, 200, 300	
The named concrete quality is a minimum quality		C 30/37 XF4	C 30/37 XF4	C 30/37 XF4				RECYFIX PLUS 100, 150, 200, 300	
EN 206-1 /	Concrete quality of stretcher	C25/30 XF1	C25/30 XF1	C25/30 XF1					
DIN 1045-2	Concrete quality of foundation								
<small>The installation examples / advice constantly are adapted to the technical conditions. We are not liable for damages of any kind. Before planning or installation please verify the current version at www.hauraton.com</small>									
Condition: 22.02.2007				Our general installation instructions apply.			Surface: Concrete		
<small>** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASEFIX TRAFFIC SUPERBLOC or FASEFIX TRAFFIC GUGIBLOC</small>									
Description: RF-Sia-100 Typ.01_Einbau Klasse C 250 in Beton_GB Drawing-no.: C:\pdmw\inventor\2007\05\10\000014851.idw									

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RECYFIX®PLUS/RECYFIX®STANDARD

1234567

ABCDE

**Installation example
Pavement cl. C 250**

* h = Channel height plus overhang

Category according to EN 1433 / DIN V 19580		A 15	B 125	C 250	D 400**	E 600	F 900
Foundation: with b / thickness d / height h (in cm)				10 / 15 / *			
The named concrete quality is a minimum quality							
EN 206-1 /	without danger of frost on the lateral support			C 20/25			
DIN 1045-2	with danger of frost on the lateral support			C 25/30 XF1			
<small>The installation examples / advise constantly, are adapted to the technical conditions. The conditions of application are not to be exceeded. For more information, please refer to the current version at www.hauraton.com. Before planning or installation please verify the current version at www.hauraton.com.</small>							
<small>** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASEFIX TRAFFIC SUPERBLOC or FASEFIX TRAFFIC CUBBLOC</small>							
Condition: 22.02.2007				Our general installation instructions apply.			
Description: RF-Sta-100 Typ.01_Einbau Klasse C 250 in Pflaster_GB				Surface: Pavement			
Drawing-no.: C:\pdmw\inventor\2007\05\10\0000014772.dwg							

1234567

ABCDE

SLOTTED CHANNELS - INSTALLATION INSTRUCTIONS

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation.

INSTALLING THE CHANNEL BASE SEGMENTS:

Dig a trench of sufficient size for installing the base segments of the channels. Set the outlet for connecting to the ground drainage pipe. Fill the trench with concrete up to level d (see installation examples). Spread the concrete evenly. Attach a line.

INSTALLING A RECYFIX STANDARD CHANNEL:

- a) Connecting to a channel: Cut open the pre-formed outlet spigot at the channel. When connecting on the side, make sure the surface finish level will be as required in relation to the channel. When using channels with slotted cover, the installation of a foul air trap only makes sense at the inlet box or channels with removable covers.
- b) Connecting to an inlet box: Cut open the appropriate outlet opening at the inlet box and connect the inlet box with the ground drainage pipe.
- c) Connecting to an end cap with outlet: First set the channel with end cap and connect it to the ground drainage pipe.

INSTALLING A FASERIX STANDARD CHANNEL:

- a) Connecting to a channel: First lay the FASERIX STANDARD channel with factory-preformed outlet spigot. When connecting on the side, make sure the surface finish level will be as required in relation to the channel. When using channels with slotted cover, the installation of a foul air trap only makes sense at the inlet box or channels with removable covers.
- b) Connecting to an inlet box: Cut open the appropriate outlet opening at the inlet box and connect the inlet box with the ground drainage pipe.

- c) Connecting to an end cap with outlet: First set the channel with end cap and connect it to the ground drainage pipe.

Lay the RECYFIX STANDARD or FASERIX STANDARD channels along the line. Important! Take note of the direction of flow! Insert a closed end cap at the beginning or - if both sides are open - at the beginning and end of the channel run.

Put the slotted covers into place to give the channels rigidity. Bank up a concrete haunching on both sides of the channel to give support to it. Lay the structural sub-base for the surface finish on the sides of the slotted covers and then lay the surface finish (e.g. paving etc.) onto the sub-base in accordance with the installation examples.

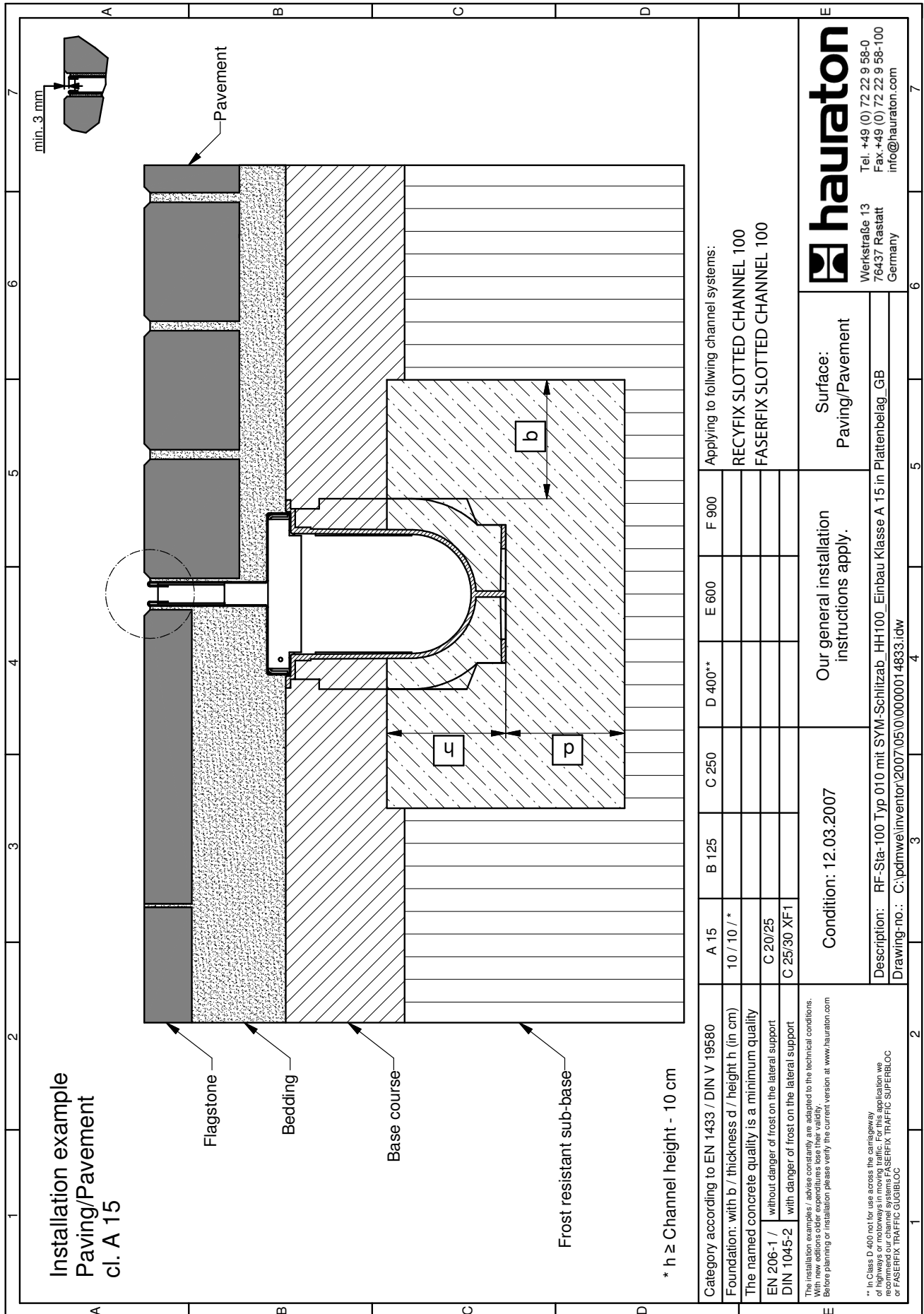
Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the slotted cover.

Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.

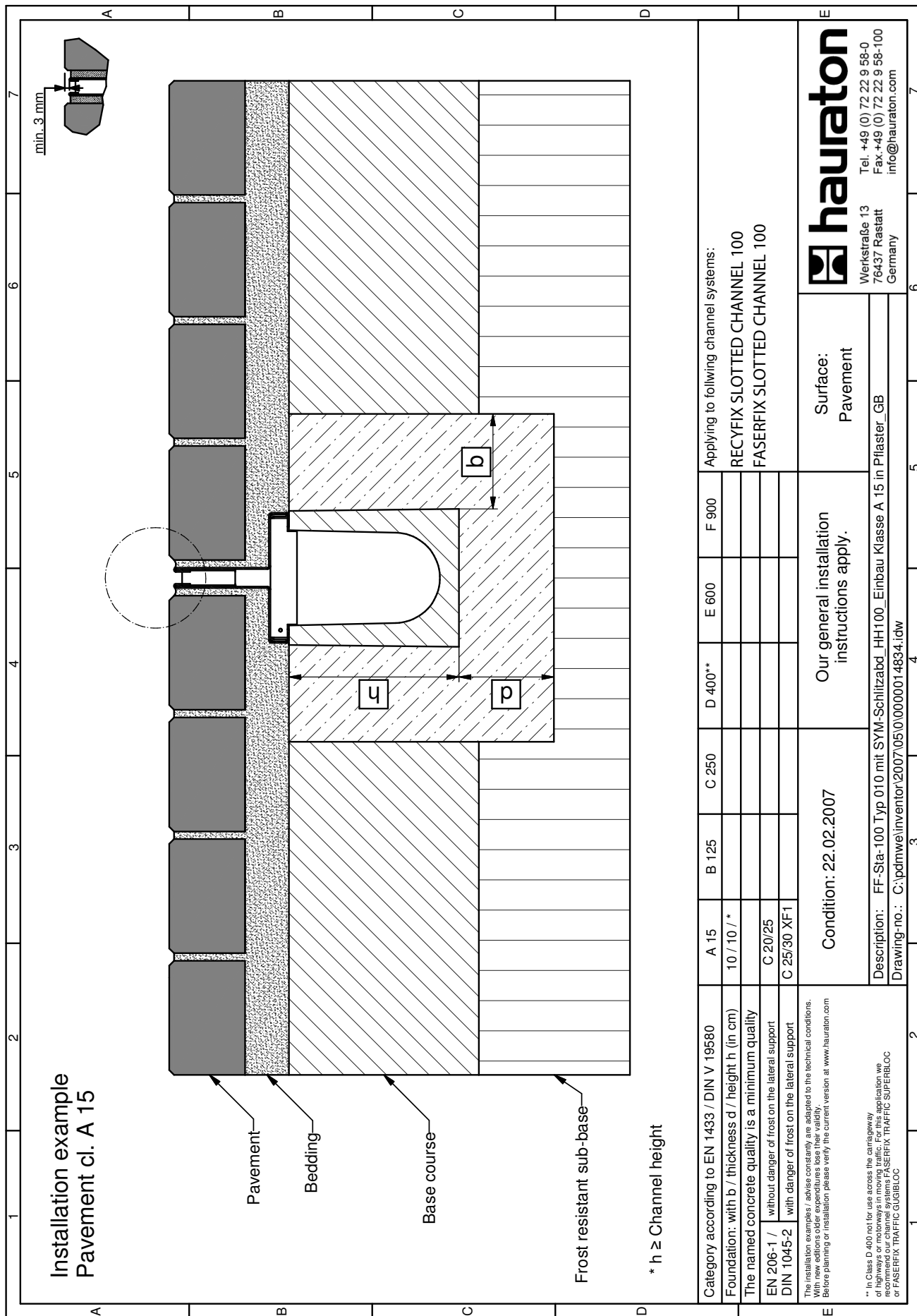
Before adjacent areas are compacted or covered with concrete, asphalt or paving, the channels have to be sufficiently rigid. Where the products are installed in paved surfaces, the joint along the channels should be filled with cement-latex mortar or a bitumen compound. These installation instructions apply similarly to inlet boxes.

Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

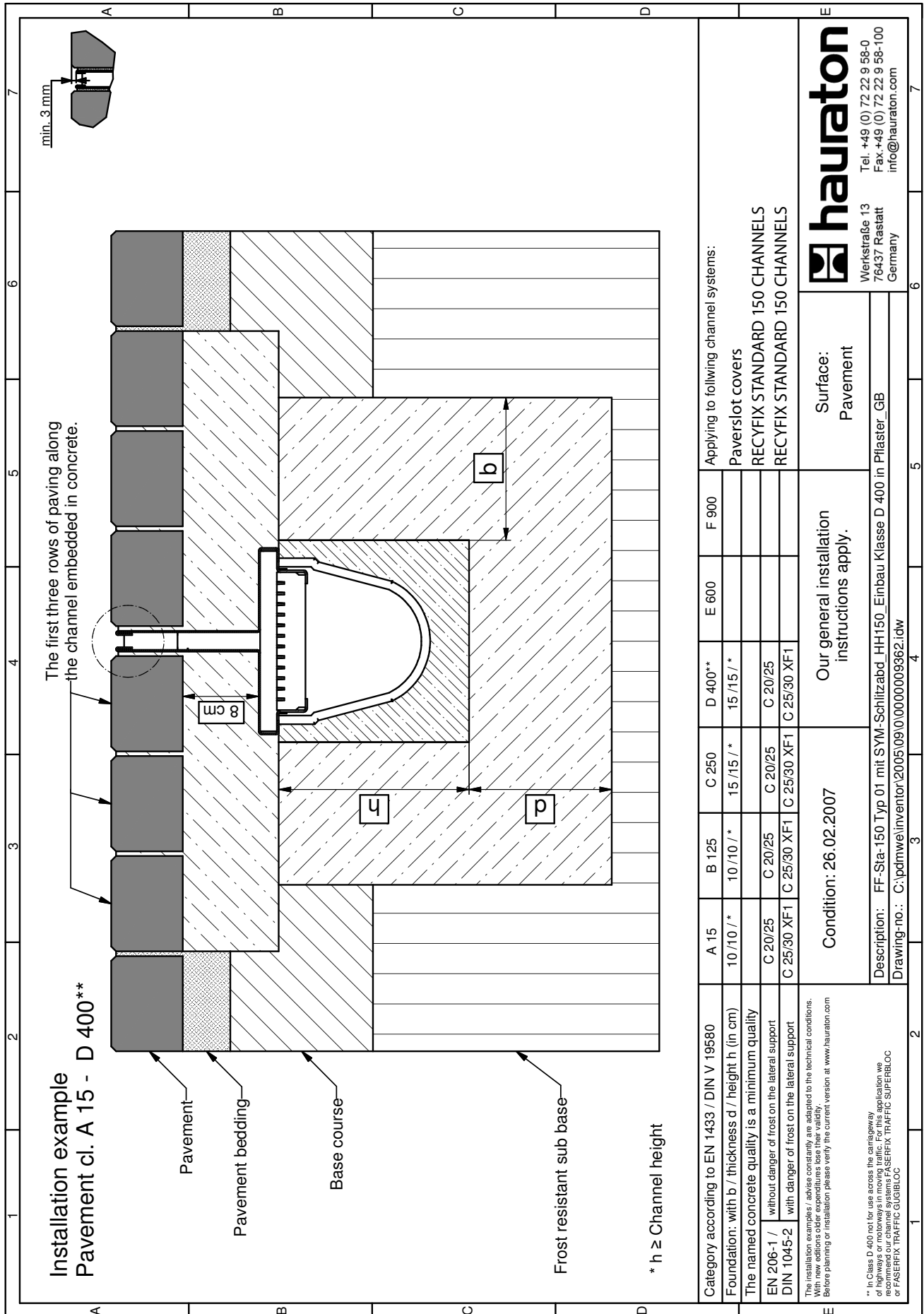
SLOTTED CHANNELS



SLOTTED CHANNELS



SLOTTED CHANNELS



FASERFIX® STANDARD – INSTALLATION INSTRUCTIONS

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. Technical regulatory instruments and guidelines applicable in the respective state or country should be taken into account for installation.

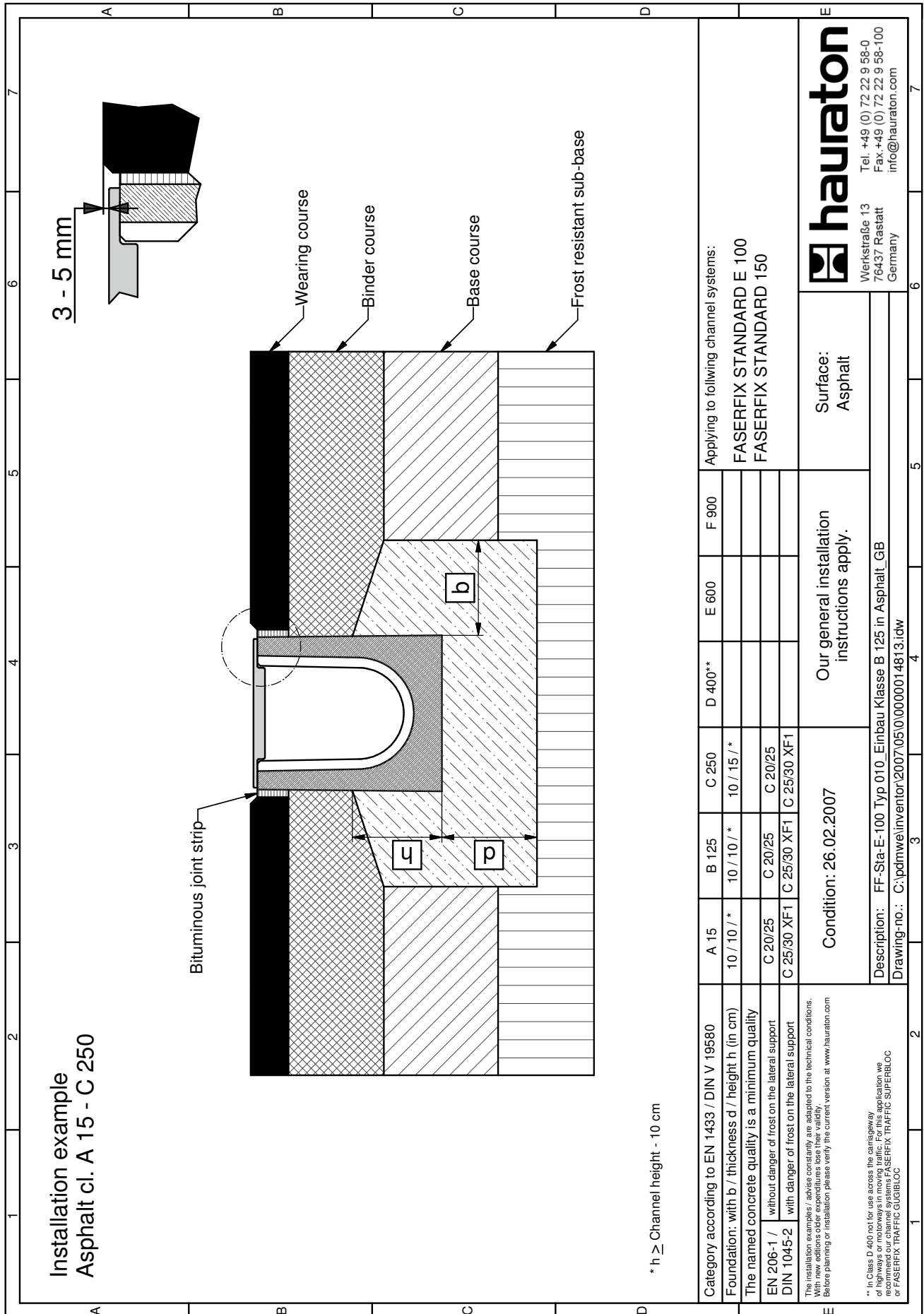
1. Please ensure that the adjoining surface finishes are laid to finish permanently 3 to 5 mm higher than the top edge of the channel.
2. Where the installed product is subject to horizontal forces, e.g. in concreted areas and reinforced concrete structures, effective expansion joints have to be provided in both directions in accordance with DIN 18318.
3. Before adjacent areas are compacted or covered with concrete, asphalt or paving, the channels have to be sufficiently rigid.
4. Where the products are installed in paved surfaces, the joint along the channels should be filled with paving gravel or bitumen compound.

These installation instructions apply similarly to inlet boxes.

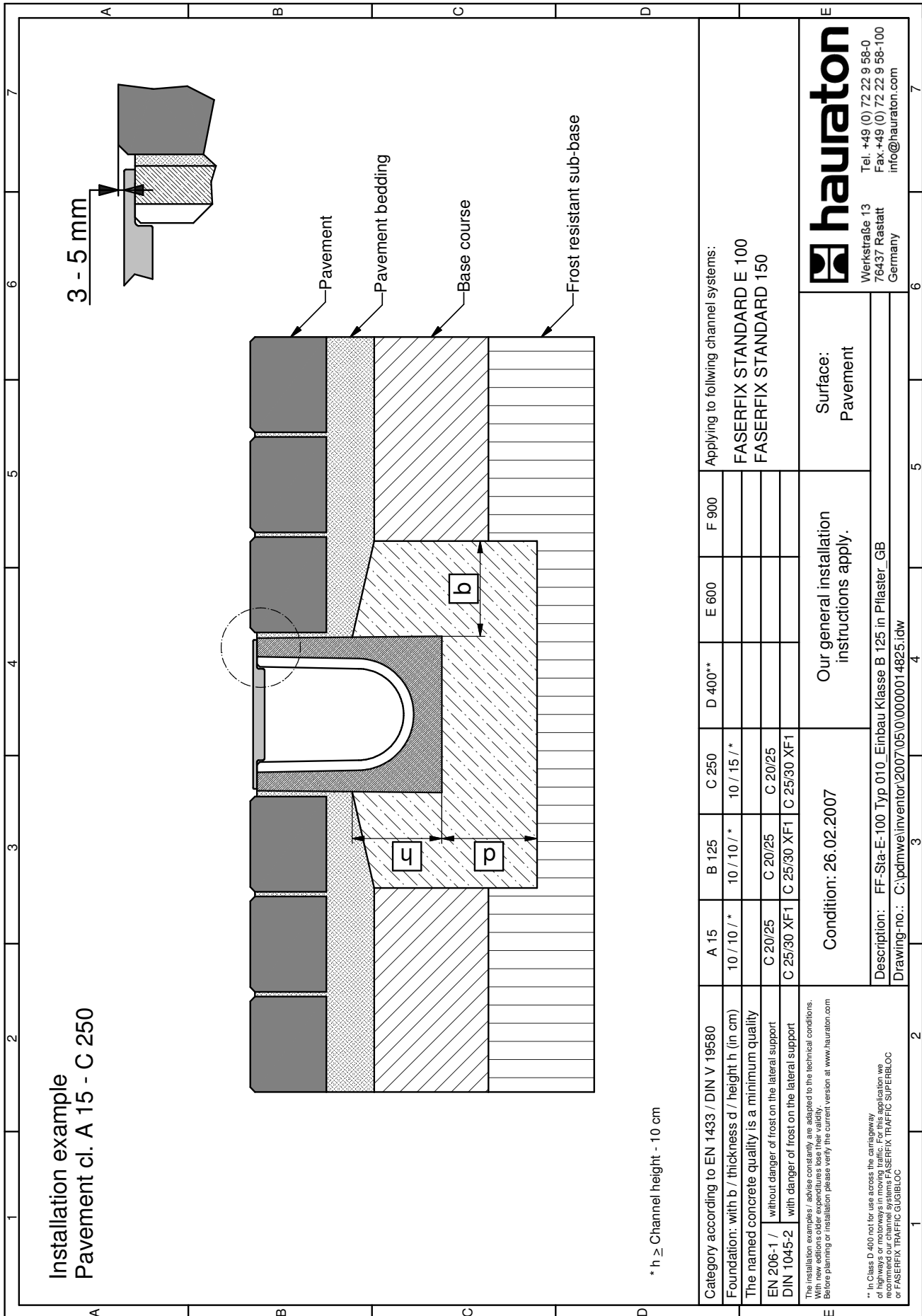
Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 01/07

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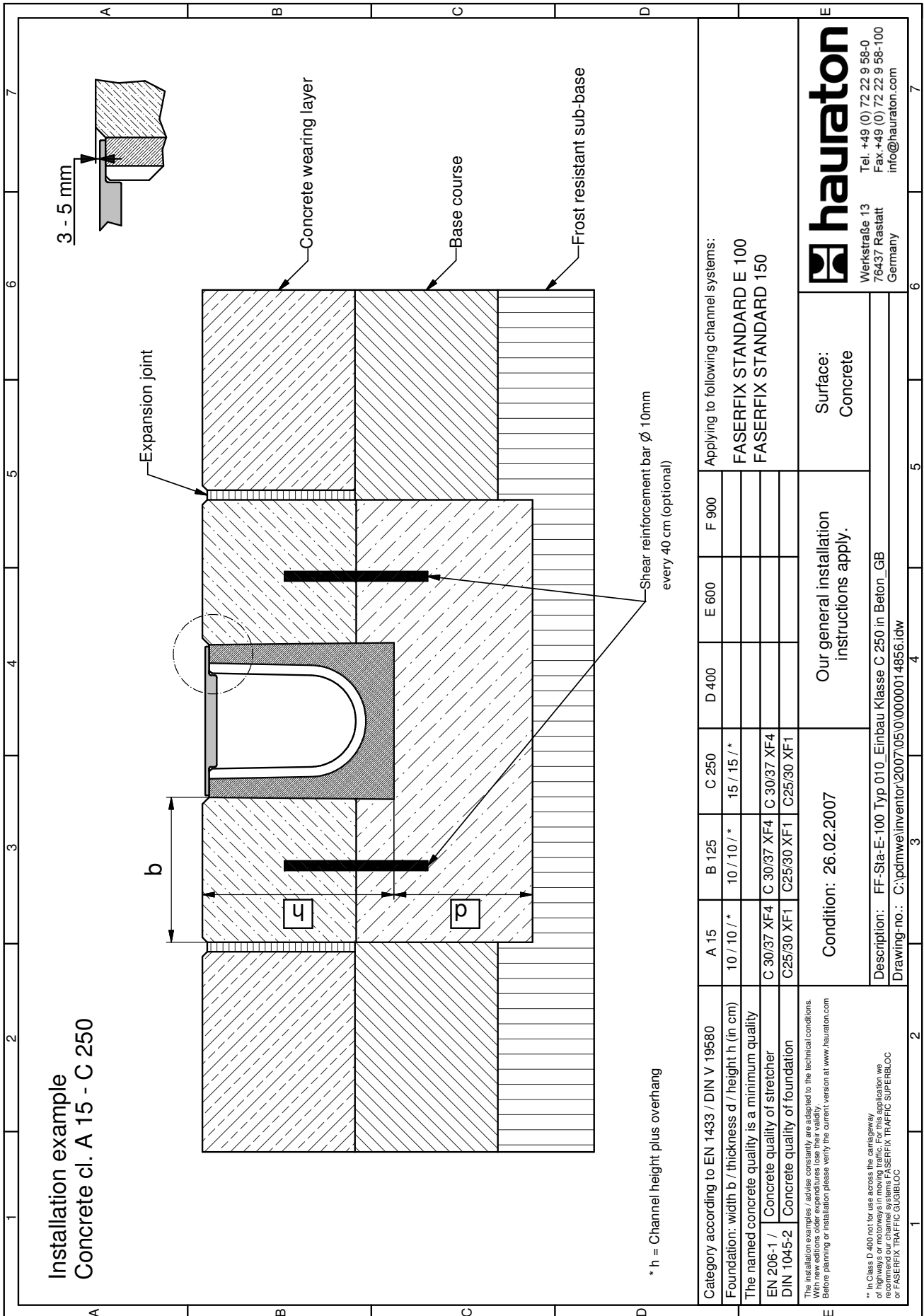
FASERFIX®STANDARD



FASERFIX®STANDARD



FASERFIX® STANDARD



Applying to following channel systems:

- FASERFIX STANDARD E 100
- FASERFIX STANDARD 150

hauraton
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 Germany
 Tel. +49 (0) 72 22 9 58-0
 Fax. +49 (0) 72 22 9 58-100
 info@hauraton.com

Surface:
Concrete

Our general installation instructions apply.

Condition: 26.02.2007
 Description: FF-Sta-E-100 Typ 010 Einbau Klasse C 250 in Beton_GB
 Drawing-no.: C:\pdmw\inventor\2007\05\10\00001\4856.idw

Category according to EN 1433 / DIN V 19580	A 15	B 125	C 250	D 400	E 600	F 900
Foundation: width b / thickness d / height h (in cm)	10 / 10 / *	10 / 10 / *	15 / 15 / *			
The named concrete quality is a minimum quality	C 30/37 XF4	C 30/37 XF4	C 30/37 XF4			
EN 206-1 / Concrete quality of stretcher	C25/30 XF1	C25/30 XF1	C25/30 XF1			
DIN 1045-2 / Concrete quality of foundation						

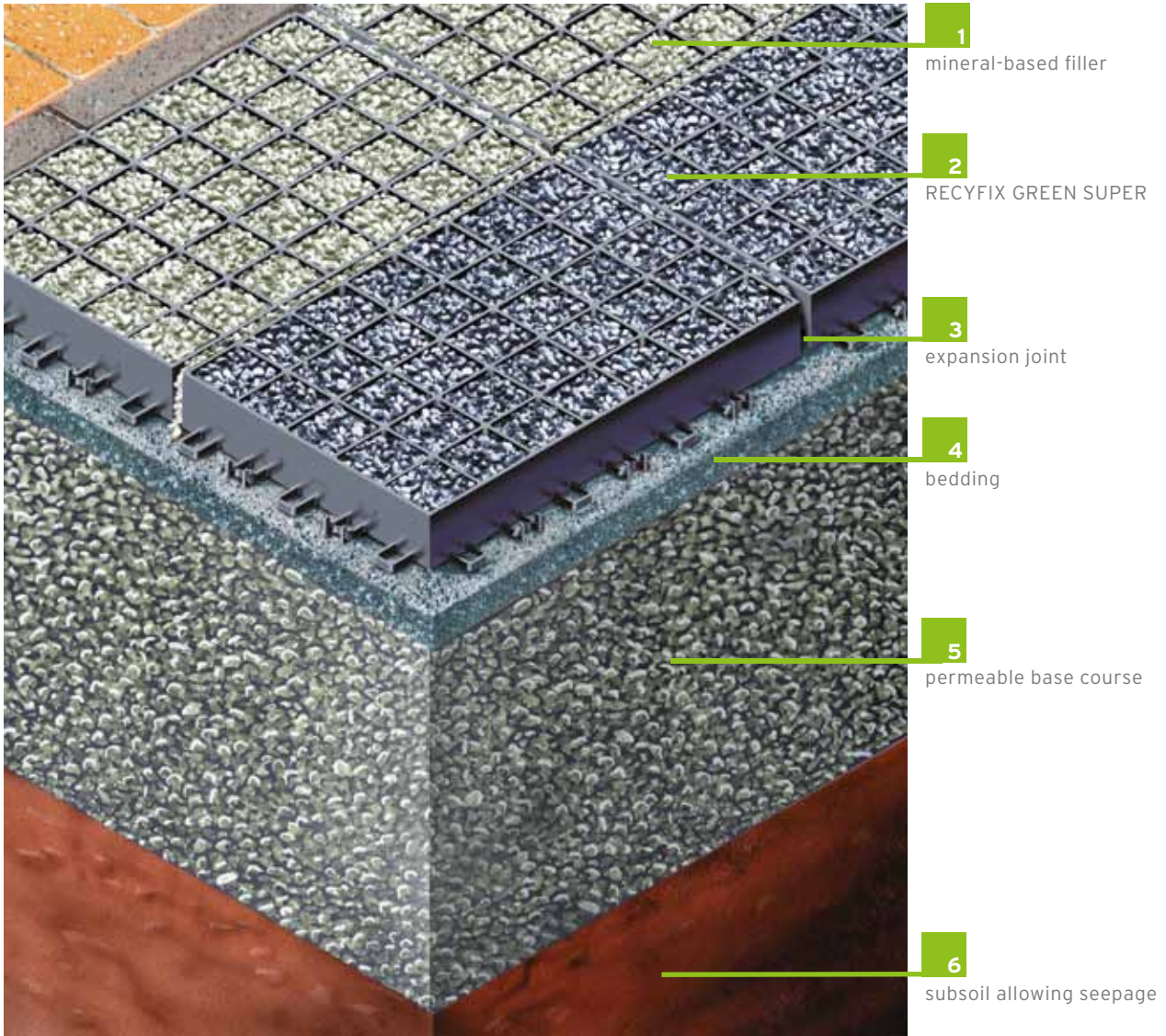
The installation examples / advice constantly are adapted to the technical conditions. We recommend to use the current version at www.hauraton.com. Before planning or installation please verify the current version at www.hauraton.com

** In Class D 400 not for use across the carriageway of highways or motorways in moving traffic. For this application we recommend our channel systems FASERFIX TRAFFIC SUPERBLOC or FASERFIX TRAFFIC GUGIBLOC

RECYFIX® GREEN SUPER – INSTALLATION INSTRUCTIONS

The installation instructions contain suggestions that are generally familiar. It is up to the specifiers involved to stipulate any special installation methods appropriate to local soil and load bearing conditions. The codes and regulations generally familiar to the trade, such as DWA-A 138, DIN 18318 and DIN 18315 ZTVT-STB, should be taken into account during installation. RECYFIX GREEN SUPER are optimally suitable for incidental using of parking areas with low utilisation for car traffic, trucks or busses, e. g. in commercial areas. In emergency situations sufficient safety is provided in accordance with DIN 14090 (regarding access for fire engineers). Slopes of more than 5% may not be formed in traffic-bearing surfaces. Larger slopes may be formed if the location of installation is an embankment.

1. Preparation of the substructure should be carried out subject to the above regulations. Care should be taken to ensure sufficient permeability is achieved without compromising stability.
2. Compression of the loose base course together with its later load bearing, e. g. buses or coaches on frost-free subsoil, should be approx. 50 cm. The materials should be made up in accordance with ZTVT-STB.
3. Before the honeycombs are laid a bedding layer should be prepared depending on the depth to which the honeycombs will later be filled. After compression it should be about 4 cm thick. If the honeycombs are to be filled with a mineral-based mixture, i.e. with special grit crushed stone fines 0/5 or similar may be used. Any further washing out of material into the lower layers should be prevented by ensuring the filter stability of the layers. If the honeycombs are to be filled with turf, an appropriate layered lava mixture should be used for the bedding.
4. RECYFIX GREEN SUPER have been designed to be laid with an expansion joint in order to compensate for any expansion in the honeycombs. The linking system enables the joints to be locked in place from above by applying pressure with the foot. Curves or gaps can be created using standard cutting tools.
5. The anchor pin system at the base of the comb guarantees a good fit on the bedding. The entire area should be framed with an edging or fixed with anchoring pegs so that it is level. Depending on the way the ground is prepared, these anchors can be hammered in through special guide ways in the honeycomb.
6. When being filled with mineral-based filler, e. g. gravel or special grit (2/5), the honeycombs should be filled in before and after riddling permanently up to the upper edge, which can be done using standard plate vibrators. The tyre profile must not get caught with the webs of the comb.
7. Where grass is being used, the honeycombs should be filled with growth substratum in two phases before and after riddling, using standard plate vibrators, in accordance with DIN 18917 and DIN 18035 part 4. The surface should be watered before riddling takes place so that the substratum can settle. After seeding in a depth of approx. 7 mm, the refilled substratum should be level with the top of the honeycombs. During germination the surface should be watered regularly until after the first cut and it should remain unused by vehicle traffic. The tyre profile must not get caught with the webs of the comb.
8. We recommend that the grass surface remain unused and be tended regularly - e. g. watered, mowed, filled up and if necessary fertilized - until after the 4th cut. This will ensure the area maintains the lasting appearance of a grassed surface.



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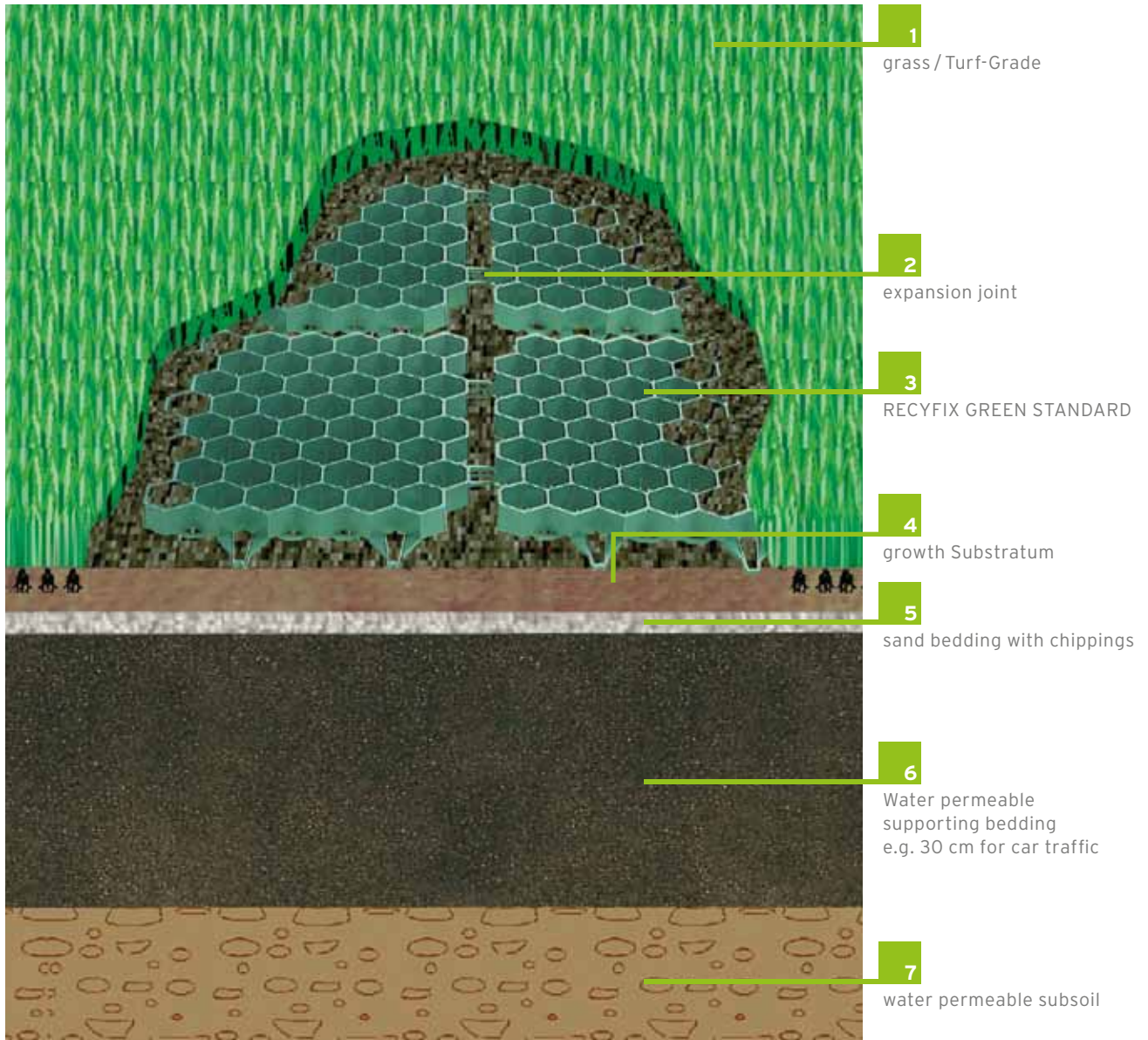
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RECYFIX® GREEN STANDARD – INSTALLATION INSTRUCTIONS

Our installation instructions are generally accepted suggestions. Special methods of installation which may be necessary due to ground or soil conditions should be followed according to the criteria: As much compression as necessary, as much permeability as possible. Various regulations and technical guidelines well-known among experts, such as DWA-A 138 RSTO 01, DIN 18035, DIN 18917, have to be considered during installation. RECYFIX GREEN STANDARD are optimally suitable for incidental use of parking areas with low utilisation for car traffic, e.g. in private areas with simultaneous planting vegetation. For regular access roads or filling with chips the RECYFIX GREEN STANDARD are unqualified. In case of emergencies sufficient security according to DIN 14090 „Areas for fire engines on plots of land“ is available. Slopes of over 5% are not advised.

1. When preparing the bedding, special attention should be given to achieve sufficient water permeability, however stability always has priority.
2. The compression and thickness of the supporting bedding is governed by the proposed loading (automobiles, pedestrians, etc.), e.g. 30 cm for car loading.
3. Prior to laying the RECYFIX GREEN STANDARD, a layer of sand with chippings or similar graded mixture should be spread over the supporting bedding. After compaction it has a thickness of at least 3 cm. If required add long-time fertilizer.
4. RECYFIX GREEN STANDARD elements are simply joined up, as shown in the illustration. Each element is structurally connected to the next one, automatically forming a larger expansion joint. It is easy to form round shapes as well as indentations using usual commercially available cutting tools. The RECYFIX GREEN Edge marker inserts can be fitted into the honeycombs as visual boundaries.
5. The linked hexagonal system with anchor pins on the underside ensures well spread anchoring in the bedding layer. The complete area should be bordered with suitable edging or fixed with RECYFIX Anchoring pegs.
6. The filling of the RECYFIX GREEN STANDARD either with Substratum and the seeding should be done in two operations: before and after the riddling. The area should be watered before the riddling so that the substratum can settle well. After the seeding in a depth of approx. 7 mm the filled up substratum should be level with the top of the RECYFIX GREEN STANDARD.
7. During germination the grass seed has to be watered regularly. Do not drive over the newly sown grass during germination.
8. We recommend that the freshly sown turf is left to rest up to the fourth mowing and is regularly maintained horticultural with e.g. mowing, filling up, watering and fertilising if necessary. These measures will maintain the appearance of a turf for the long term, if they will be repeated regularly if necessary.

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DRAINFIX® BLOC – INSTALLATION INSTRUCTIONS

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. The system designer and contractors need to take into account statutory and project-related regulations. DRAINFIX BLOCS are suitable as fill material in infiltration systems for stormwater and ground conditions not subject to hazardous pollution, in accordance with worksheet DWA-A 138. HAURATON will supply free-of-charge calculations for determining the dimensions and number of layers of the DRAINFIX BLOC elements to be installed in the infiltration system, based on the above worksheet. If the area above the infiltration system with the DRAINFIX BLOC elements is designed for traffic loads, the construction classes of RStO 01 with respect to deformation module EV2 as well as local ground conditions have to be taken into account. The permeability of compacted ground layers must be at least equivalent to the values for infiltration entered into the calculations. The depth and thickness of layers has to be calculated for load-bearing capacity in order to meet the respective load classes of passenger cars, HGV and SLW loads. In these calculations the depth of invert levels is determined by the existing inherent angle of incline of the surrounding soils as well as the imposed traffic load.

INSTALLATION PROCEDURE

1 Building pit with granular sub-base

Excavate a building pit of sufficient size for the DRAINFIX BLOC modules and working space, secure against caving in and level off the base. The standards relating to earthworks and the construction of building pits, as well as frost-free depth have to be observed. Lay a granular sub-base 0/8 of approx. 5 cm thickness as base for the DRAINFIX BLOC modules; in case of imposed traffic loads this should be compacted. The permeability of the granular sub-base should be adjusted to the k_f -value for permeability of the surrounding soil. Where the finished infiltration body is to be used for road traffic, the covering layers have to withstand deformation according to the formula $E_{v2} > 45 \text{ MN/m}^2$ and may need levelling layers in accordance with RStO 01. Where DRAINFIX BLOC elements are to be installed near buildings, the necessary distances need to be observed as specified in DWA-A 138. The minimum distance to the average highest groundwater level is 1 m. The distance of trees to the infiltration structure must be at least half the diameter of the tree's crown when fully mature.



Building pit with granular sub-base

2 Lining the building pit with geotextile

Use the geotextile to line the building pit, making sure that the DRAINFIX BLOC are wrapped up with an overlap of approx. 50 cm at the joints. The required size of the GRK3 fleece will be specified as part of the calculations for the structure.



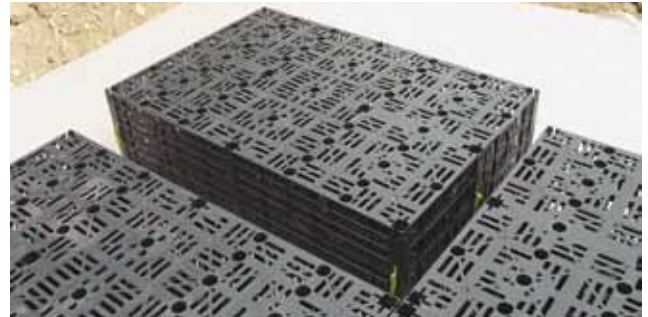
GRK3 fleece with overlap

3 Installing the DRAINFIX BLOC modules, wrapping up with fleece

The individual blocks are interconnected with the help of the connector hooks so that they form a thrust-resisting homogenous body. The hooks of the module should point to the edge of the pit and determine the direction of installation (see figures A to D). These visible hooks on the outside of the structure should be cut off in order to prevent them from damaging the fleece when the structure is wrapped up later.



Laying several layers with connection adapter



A Link up the smaller side of the DRAINFIX BLOC to the smaller side of the block already installed using the connector hook.



B This will form an open joint along the longer side.



C Engage the connector hooks by lifting the block slightly and moving the longer side against the side of the block already laid.



D Lower the DRAINFIX BLOC again and both sides of the block will be securely linked with resistance against thrust.

DRAINFIX® BLOC – INSTALLATION INSTRUCTIONS

If several layers of blocks are laid on top of each other, either offset in bond or straight, additional connection adapters have to be inserted into the square openings at the top of the DRAINFIX BLOC modules to provide thrust resistance. For straight installation 1 adapter is required per layer and element whereas for offset installation (layers offset against each other by 90°) 4 adapters are required per layer and grid of 2.40 m x 2.40 m. For structural reasons, DRAINFIX BLOC modules must not be reduced in size. Once all blocks have been laid, wrap up the structure covering the surface fully with geotextile. Joints should overlap by approx. 50 cm and should be secured against moving out of place by placing fill material on them.

4 Installing inlet and inspection chambers, camera inspection

After installing the inlet and outlet chambers, make an opening in the geotextile and connect the connecting pipes to the DRAINFIX BLOC modules. To do that, cut out the wall blank at the pre-formed place in the DRAINFIX BLOC. Each block element features several pre-formed blanks in DN 100 and DN 150 mm so that there are many options for connecting pipes from the inspection chambers. An opening above the fine filter and one to the DRAINFIX BLOC modules for the pipe connections to inlet/inspection chambers can be provided at the factory in accordance with specifications. Likewise it is possible for the factory to provide options for camera inspections in positions indicated on the installation plan. At the pipe connection, the edges of the fleece have to be bonded with adhesive to keep out sand. Where the blocks are laid over a wider area, several pipe inlets have to be provided to allow for even water distribution.



Opening for camera inspection

According to DWA-A 138, one inlet chamber can be connected to an area of approx. 500 m². The structure can be vented via the inlet/inspection chamber. If no vent pipes are connected to the chambers, a vent pipe must be fitted at the top of the DRAINFIX BLOC structure to achieve the same effect. In this configuration, a pipe can also have the function of an emergency overflow (e.g. from a swale above the infiltration structure).

5 Backfilling the work space, covering the structure, traffic loads

Backfill the periphery of the building pit with filter-effective non-cohesive fill material, in layers, and compact with suitable equipment. Layers to be compacted should be limited to 20 cm; vibrator plates are suitable for compacting. Compacting rollers should not be used for compacting.

Where the soil conditions are suitable, 4 layers of DRAINFIX BLOC modules are possible in pits with a max. depth of 5 m and covering layers of max. 3.50 m, e.g. for passenger car loading. However, construction details required and/or specified by the system designer have to be included, such as choice of suitable fill material or devices for reducing ground pressure.

In order to remain functional for the purpose of infiltration, the fleece must not be damaged during backfilling or compacting the building pit. Where infiltration structures are situated under areas exposed to traffic, the depth of covering layers and the deformation modules are determined by the requirements of RStO 01.



Laying the covering layers in the front-dumping method to allow vehicles to drive on the structure.

The minimum thickness of covering layers and the maximum depth of installation are calculated for the project with a computer-aided program, taking account of the anticipated traffic loads. It is not permitted to drive directly on the modules. The covering layers over the DRAINFIX BLOC modules are to be deposited using the front-dumping method. From a layer thickness of 50 cm it is possible to drive on the structure with HGV with a gross vehicle weight rating of 12 tonnes or equivalent construction machines.

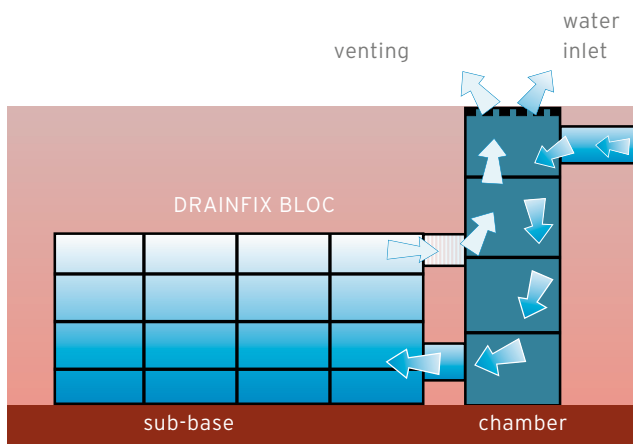
From a layer thickness of 60 cm and after compacting suitable levelling layers to $E_{v2} > 45 \text{ MN/m}^2$ the remaining top layers can be laid in accordance with RStO 01. Any deviations from the above require confirmation by the system designer or soil expert and may require additional measures.

6 Inspection and maintenance of the infiltration structure

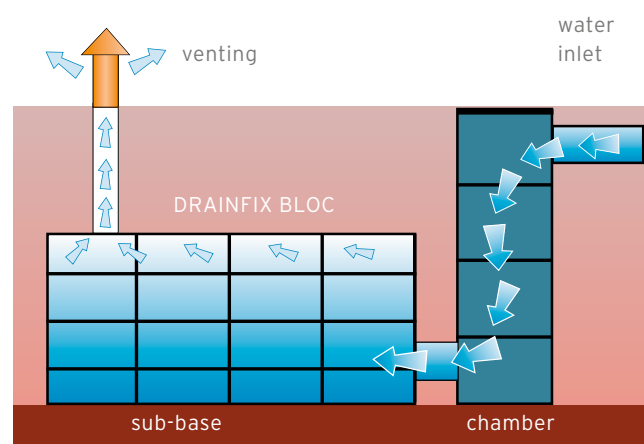
The infiltration structure should be inspected for its water level at least every six months. As an additional safeguard it is possible to carry out camera inspections. The filter function of the filter pipe at the inlet chamber should be checked as required, but particularly after heavy rainfall. It is important to ensure that no dirt or loose soil enters the infiltration structure during the installation or thereafter as this could curtail the long-term function of the infiltration structure. If the inlet chamber is used as a sedimentation chamber, the chamber should be cleaned out at least every six months, depending on the volume of sedimentation.



When the covering layer has reached a thickness of 50 cm it can support HGV of 12 t gross vehicle weight rating.

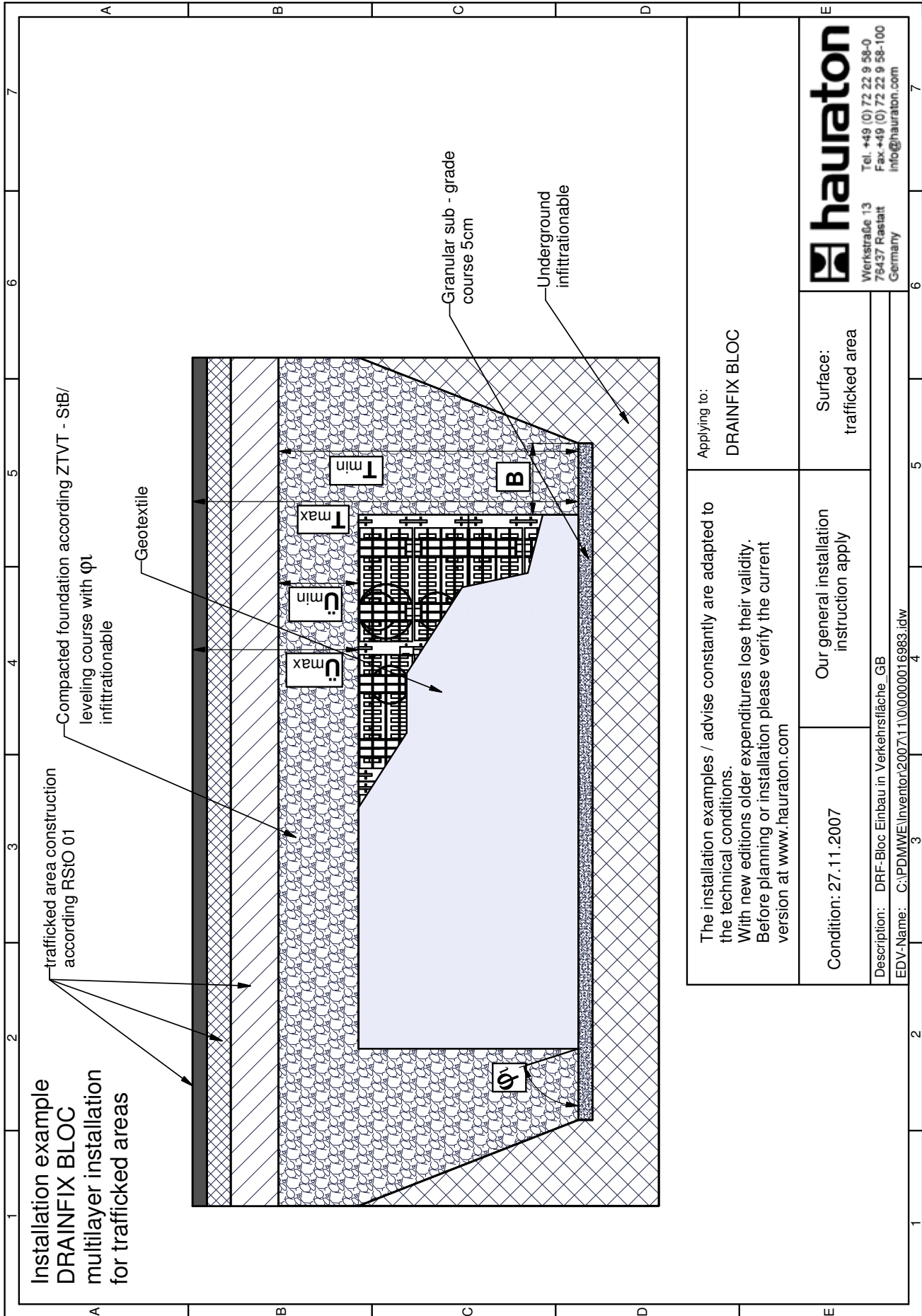


Version 1: venting via chamber



Version 2: venting via vent pipe

DRAINFIX®BLOC



Installation example
DRAINFIX BLOC
multilayer installation
for trafficked areas

trafficked area construction
according RStO 01

Compacted foundation according ZTVT - SIB/
leveling course with ϕ_1
infiltrationable

Geotextile

Granular sub - grade
course 5cm

Underground
infiltrationable

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the technical conditions.
With new editions older expenditures lose their validity.
Before planning or installation please verify the current
version at www.hauraton.com

Applying to:
DRAINFIX BLOC

Condition: 27.11.2007

Our general installation
instruction apply

Surface:
trafficked area

Description: DRF-Bloc Einbau in Verkehrsfläche_GB
EDV-Name: C:\PDMWE\Inventor\2007\11.0\0000016983.idw

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Installation depth depending on type of soil and traffic load using
DRAINFIX BLOC layers 33 cm high

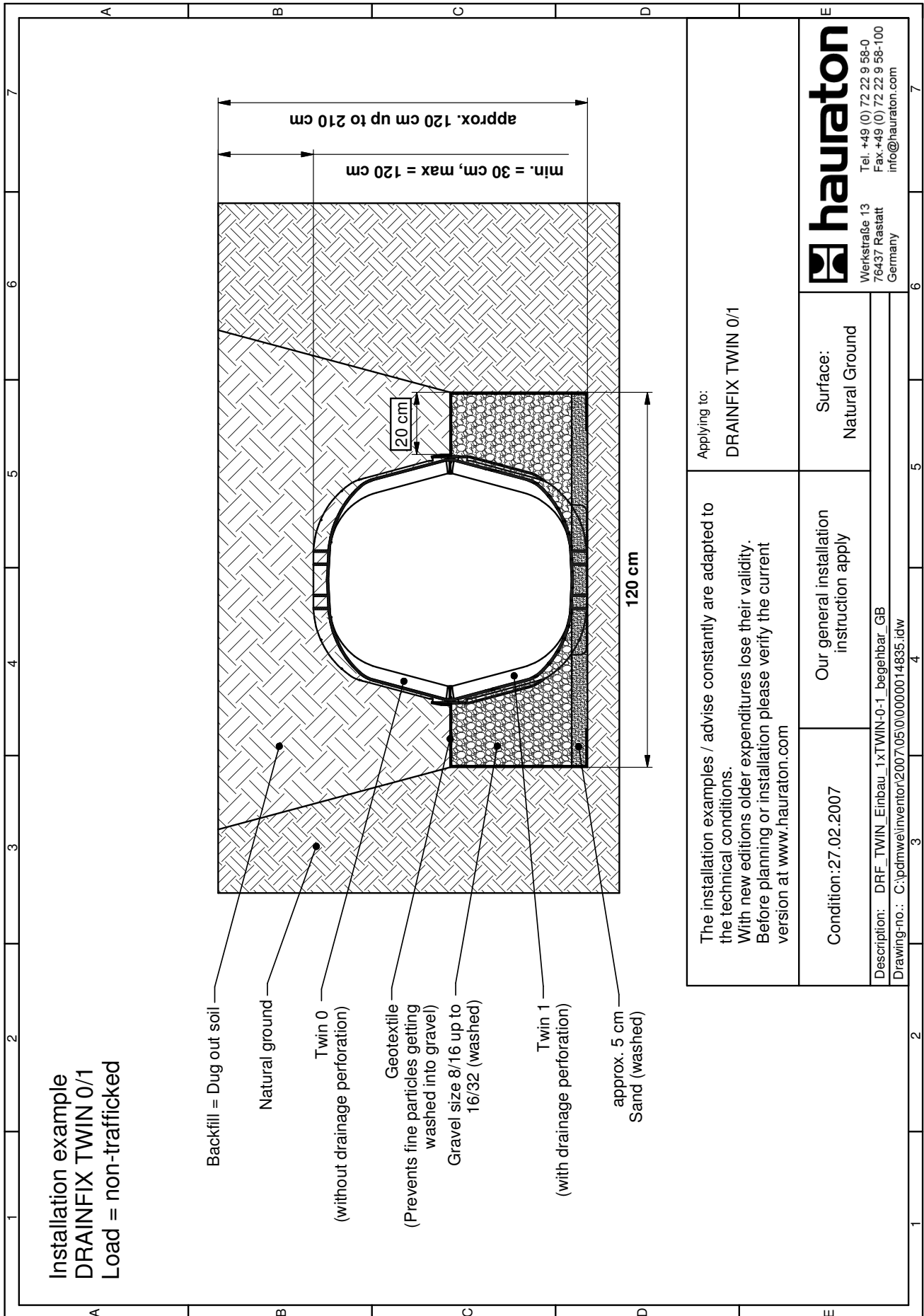
Traffic load	Passenger cars (2,5To)			HGV (12,5To)			SLW60 (60To)		
	number of layers (no.)	invert depth T max.in (m)	invert depth T min. in (m)	number of layers (no.)	invert depth T max.in (m)	invert depth T min. in (m)	number of layers (no.)	invert depth T max.in (m)	invert depth T min. in (m)
inner angle of incline of substrate = sub-base ϕ l in (degrees)									
25	5	1,90	0,60	4	1,70	0,85	---	---	---
30	6	2,25	0,60	5	2,25	0,85	3	1,50	0,90
35	8	3,00	0,60	7	2,75	0,85	5	2,25	0,90
40	11	3,75	0,60	9	3,50	0,85	8	3,25	0,90
45*	13	4,50	0,60	12	4,50	0,85	11	4,25	0,90
50*	14	5,00	0,60	14	5,00	0,85	14	5,00	0,90
covering layer \ddot{U} min. in (m)	0,25			0,50			0,50		
covering layer ** \ddot{U} max. in (m)	3,50			3,25			3,00		

*inner angle of incline of the compacted levelling layers + additional measures for reducing ground pressure

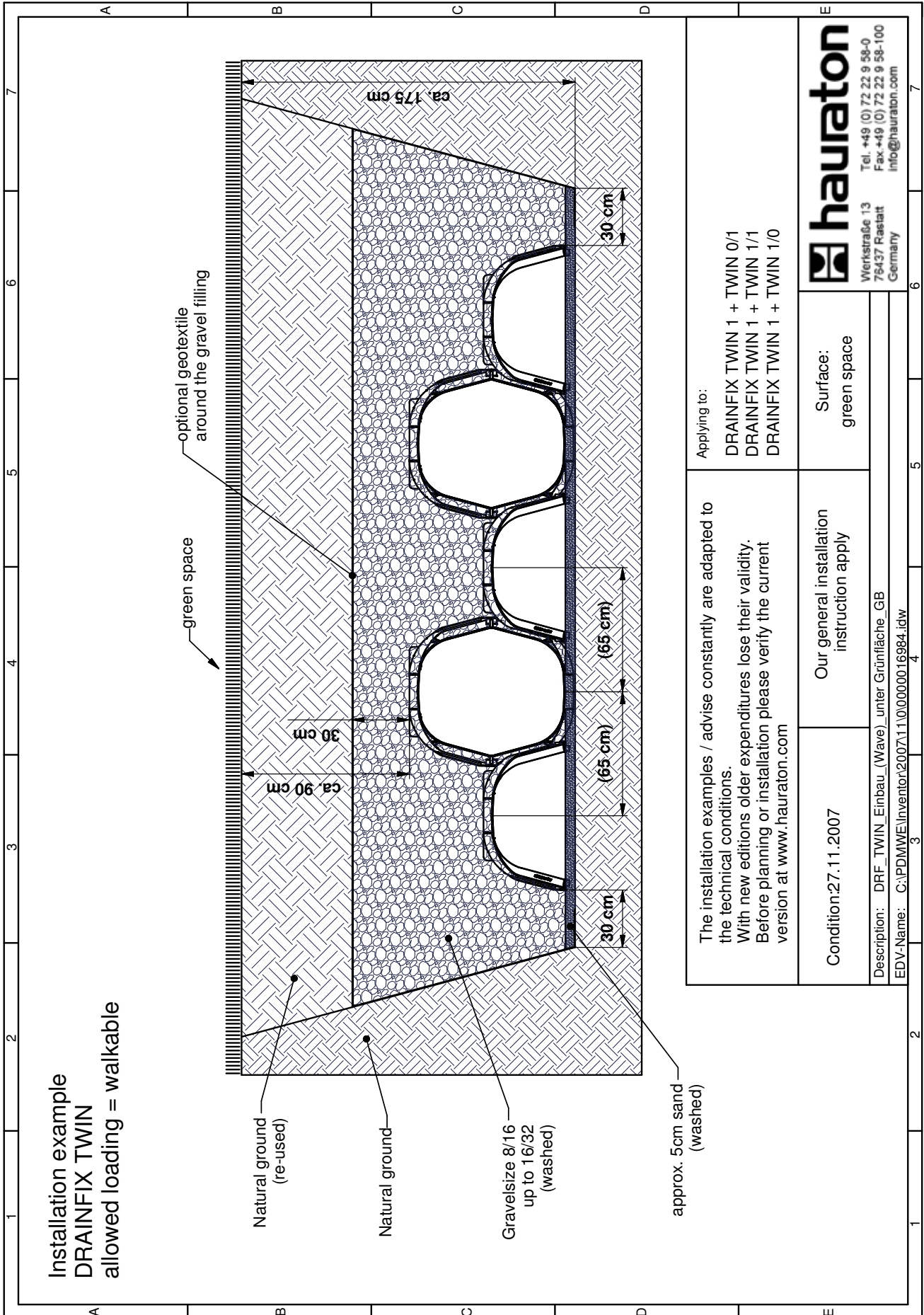
**where the thickness of covering layers is increased to \ddot{U} max, modifications in number of layers and settlement characteristics have to be considered by the soil engineer

width of work space $B \geq 50$ cm

DRAINFIX®TWIN



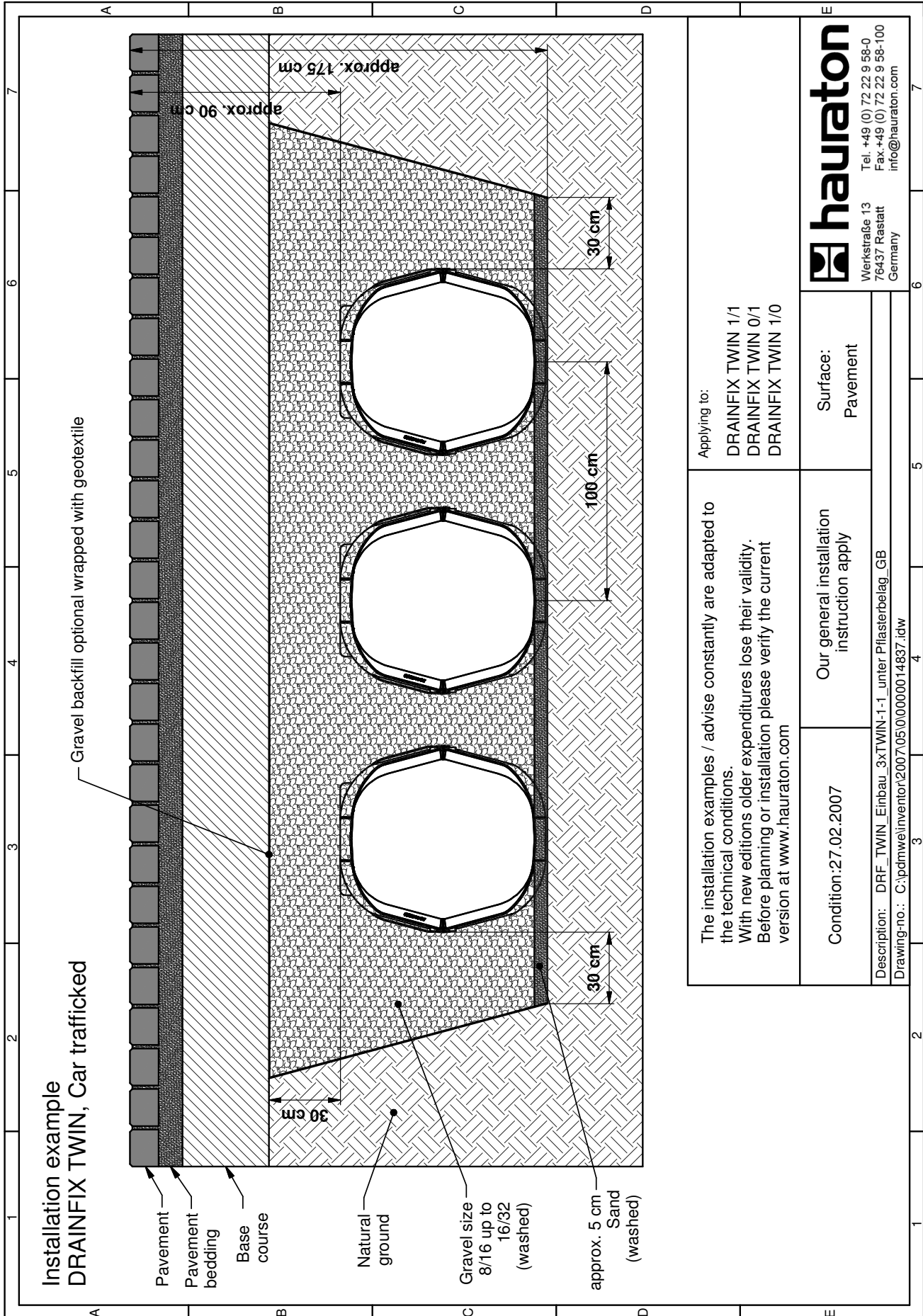
DRAINFIX®TWIN



<p>The installation examples / advise constantly are adapted to the technical conditions. With new editions older expenditures lose their validity. Before planning or installation please verify the current version at www.hauraton.com</p>	<p>Applying to: DRAINFIX TWIN 1 + TWIN 0/1 DRAINFIX TWIN 1 + TWIN 1/1 DRAINFIX TWIN 1 + TWIN 1/0</p>
<p>Condition: 27.11.2007</p> <p>Description: DRE_TWIN_Einbau_(Wave)_unter_Grünfläche_GB</p> <p>EDV-Name: C:\PDMWE\inventor\2007\11\0\0000016984.idw</p>	<p>Our general installation instruction apply</p> <p>Surface: green space</p>

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 Fax +49 (0) 72 22 9 58-100
 info@hauraton.com

DRAINFIX®TWIN



Applying to:
DRAINFIX TWIN 1/1
DRAINFIX TWIN 0/1
DRAINFIX TWIN 1/0

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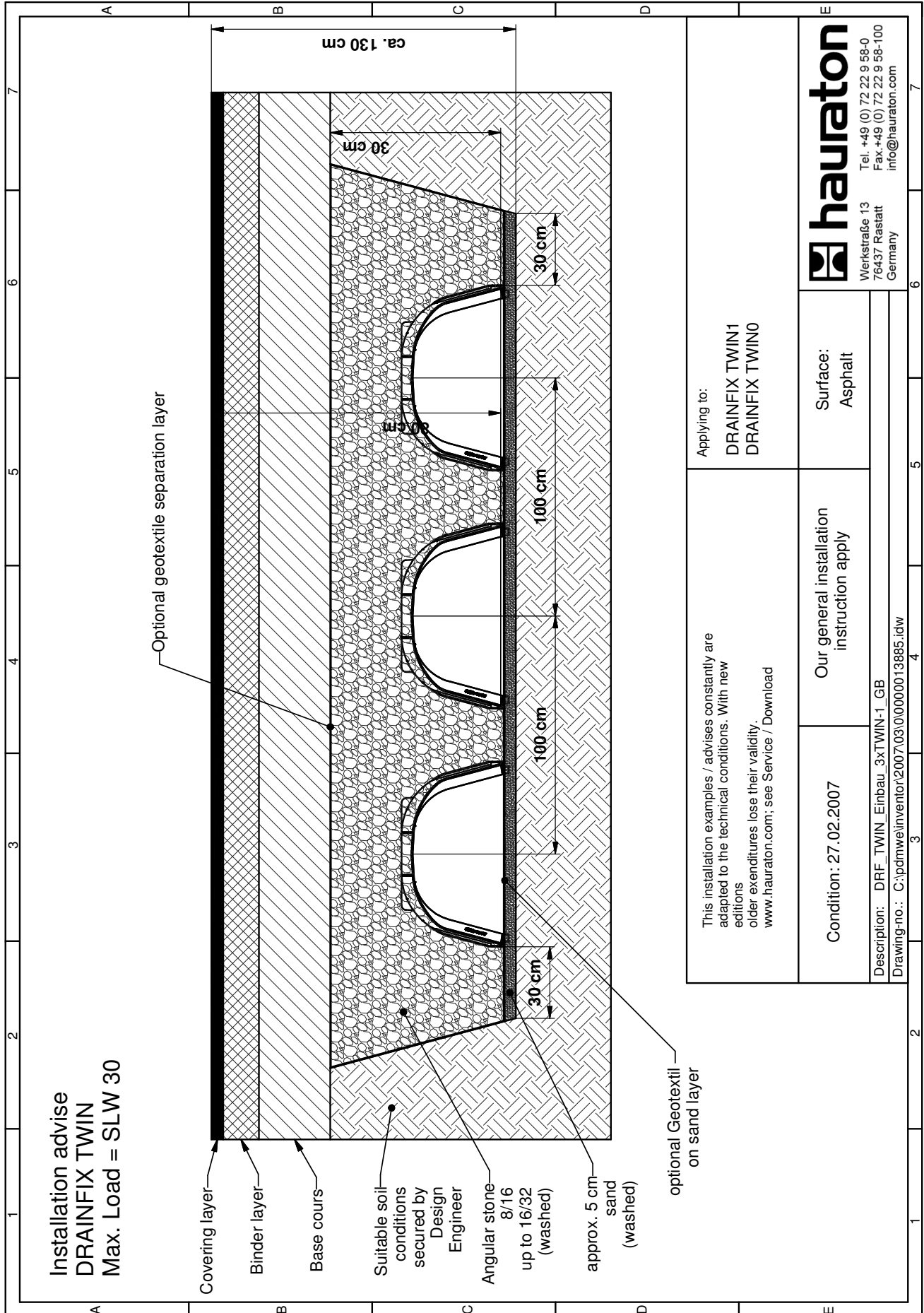
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 info@hauraton.com

Surface:
Pavement

Our general installation instruction apply

Condition: 27.02.2007
 Description: DRE_TWIN_Einbau_3xTWIN-1-1 unter Pflasterbelag_GB
 Drawing-no.: C:\pdm\we\inventor\2007\05\0\0000014837.idw

DRAINFIX®TWIN



Applying to:
DRAINFIX TWIN1
DRAINFIX TWIN0

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Surface:
 Asphalt

Our general installation instruction apply

Condition: 27.02.2007
 Description: DRF_TWIN_Einbau_3xTWIN-1_GB
 Drawing-no.: C:\pdm\we\inventor\2007\03\0\0000013885.idw

HAURATON PRODUCT SCOUT

AT A GLANCE: FIND THE RIGHT SYSTEM
FOR YOUR APPLICATION REQUIREMENTS.

REQUIREMENTS FOR APPLICATION	PRODUCTNAME	NOMINAL WIDTH / LOAD	CATALOGUE
PEDESTRIAN / WHEELCHAIR TRAFFIC	FASERFIX POINT STANDARD	-	LANDSCAPING
	DACHFIX	-	LANDSCAPING
	ECONOMY RINNEN		LANDSCAPING
	RECYFIX GREEN	2000 kN/m ²	LANDSCAPING
	LINEFIX	-	LANDSCAPING
	RECYFIX STREIF	-	LANDSCAPING
	SPORTFIX	-	SPORT
PASSENGER CAR TRAFFIC	FASERFIX STANDARD	100	LANDSCAPING
	ECONOMY RINNEN		LANDSCAPING
	RECYFIX POINT	-	LANDSCAPING
	FASERFIX POINT STANDARD	-	LANDSCAPING
	DRAINFIX TWIN	depending on installation SLW 30	AQUA
HGV TRAFFIC	DRAINFIX BLOC	depending on installation SLW 60	AQUA
 CLASS A 15, TEST FORCE 15 KN Traffic areas that can only be used by pedestrians and cyclists.	FASERFIX SUPER KS	100	CIVILS
	RECYFIX PLUS	100, 150, 200	LANDSCAPING
	RECYFIX STANDARD	100, 150, 200, 300	LANDSCAPING
	FASERFIX STANDARD	100	LANDSCAPING
	SLOTTED CHANNEL	100	LANDSCAPING
	FASERFIX POINT STANDARD	-	LANDSCAPING
	FASERFIX SUPER KS	100	CIVILS
 CLASS B 125, TEST FORCE 125 KN Paths, pedestrian zones and similar areas, passenger car parking lots and assenger car park decks.	FASERFIX SUPER KS	100	CIVILS
	RECYFIX PLUS	100, 150, 200	LANDSCAPING
	RECYFIX STANDARD	100, 150, 200, 300	LANDSCAPING
	FASERFIX STANDARD	100	LANDSCAPING
	FASERFIX POINT STANDARD	-	LANDSCAPING
	RECYFIX POINT	-	LANDSCAPING
	FASERFIX SUPER KS	100, 150, 200	CIVILS
 CLASS C 250, TEST FORCE 250 KN Inside kerbs and on verges not subject to traffic and similar situations, kerb lot channels.	FASERFIX SUPER KS	100, 150, 200	CIVILS
	FASERFIX SUPER	300	CIVILS
	RECYFIX PLUS	100, 150, 200	LANDSCAPING
	RECYFIX STANDARD	100, 150, 200, 300	LANDSCAPING
	FASERFIX STANDARD	100	LANDSCAPING
	FASERFIX SUPER KS	100, 150, 200	CIVILS
	FASERFIX SUPER	150, 200, 300, 400	CIVILS
 CLASS D 400, TEST FORCE 400 KN Carriageways and roads (also pedestrianised) hard shoulders of roads and parking areas for all types of road vehicles.	FASERFIX BIG	100, 150, 200, 300	CIVILS
	RECYFIX HICAP	100, 150, 200, 300, 680	CIVILS
	SLOTTED CHANNEL	150	LANDSCAPING
	FASERFIX SUPER KS	100, 150, 200	CIVILS
	FASERFIX SUPER	150, 200, 300, 400, 500	CIVILS
	FASERFIX POINT SUPER	-	CIVILS
	FASERFIX BIG	100, 150, 200, 300	CIVILS
 CLASS E 600, TEST FORCE 600 KN Areas subject to traffic with high wheel loads, e.g. ports and docks.	FASERFIX TRAFFIC	200	CIVILS
	RECYFIX HICAP	100, 150, 200, 300, 680	CIVILS
	FASERFIX SUPER KS	100	CIVILS
	FASERFIX SUPER	150, 200, 300, 400	CIVILS
	FASERFIX POINT SUPER	-	CIVILS
	FASERFIX BIG	100, 150, 200, 300	CIVILS
	FASERFIX TRAFFIC	200	CIVILS
 CLASS F 900, TEST FORCE 900 KN Areas subject to traffic with very high wheel loads, e.g. airport runways and circulation areas.	RECYFIX HICAP	100, 150, 200, 300, 680	CIVILS

**PLEASE ALSO NOTE OUR NUMEROUS
NON-STANDARD SOLUTIONS
FOR INDIVIDUAL REQUIREMENTS
IN THE DIFFERENT CATALOGUES**

HAURATON INDEX

C CATALOGUE CIVILS

L CATALOGUE LANDSCAPING

A CATALOGUE AQUA

S CATALOGUE SPORT



APPLICATION		C	L	A	S	
A	ACCESS DRIVES	X	X			
	AGRICULTURAL PLANTS, DRAINAGE OF STABLES	X	X			
	AIRFIELDS, AIRPORTS	X	X			
B	BESPOKE PRODUCTION	X				
	BESPOKE SOLUTIONS	X	X			
	BRIDGES		X			
	BUS STATIONS, BUS STOPS	X				
C	CABLE DUCTS	X				
	CAR PARKING FACILITIES (PARKING LOTS, GARAGES, WASH AREAS)	X	X	X		
	CARRIAGEWAYS AND ROADS (ACROSS)	X	X	X		
	CARRIAGEWAYS AND ROADS (ALONG)	X				
	CHEMICAL INDUSTRY / LABORATORY AREAS	X	X			
	CITYSCAPES WITH ARCHITECTURAL VALUE		X			
	COMPOSTING FACILITIES	X				
	CROSS DRAINAGE OF ROADS	X				
	CYCLE PATHS AND FOOTPATHS	X	X			
	D	DESIGN SOLUTIONS	X			
		DOWNPIPE DRAINAGE		X	X	
DRAIN-ASPHALT AREAS			X			
E	EXHIBITION GROUNDS, TRADE FAIRS	X	X	X		
	F	FAÇADE DRAINAGE	X	X	X	
FILLING STATIONS		X				
FILLING STATIONS, DECANTING STATIONS		X				
FIRE BRIGADE BUILDINGS			X			
FLAT ROOFS, TERRACES AND BALCONIES		X		X		
FLOWER BED EDGINGS, BORDERS			X			
FOOD INDUSTRY FACILITIES		X				
G	GARDENING AND LANDSCAPING					
	GRANDSTAND DRAINAGE		X			
H	HAULAGE COMPANIES, LOADING AREAS	X		X		
	HGV PARKING AREAS (PARKING LOTS, GARAGES, WASH FACILITIES)	X		X		
	HYGIENE AREAS	X				

APPLICATION		C	L	A	S	
I	ILLUMINATED CHANNELS		X			
	INDUSTRIAL BUILDING FLOORS	X	X	X		
	INDUSTRIAL BUILDINGS	X		X		
	INDUSTRIAL YARDS	X	X	X		
L	LOADING AND CARGO HANDLING YARDS	X				
M	MARKET SQUARES, MARKETS	X	X	X		
	MILITARY FACILITIES	X	X			
	MOTORWAY SERVICE STATIONS	X	X	X		
	MOTORWAY, DRAINAGE ALONG	X				
	MULTI-STOREY CAR PARKS	X				
	N	NON-STANDARD SOLUTIONS	X	X		
		P	PARKING DECKS AND MULTI-STOREY CAR PARKS	X		
PEDESTRIAN ZONES			X	X	X	
PLAYING FIELD BORDERS					X	
PLAYING FIELD DRAINAGE			X		X	
PORT FACILITIES, CONTAINER STATIONS	X					
PUBLIC AREAS AND SQUARES	X		X	X		
R	RADIAL CHANNELS		X	X		
	RAILWAY CROSSINGS		X			
	RAMPS, ACCESS TO UNDERGROUND CAR PARKS		X			
	REVOLVING DOORS		X			
	ROAD VERGE DRAINAGE	X	X			
	ROADS, PATHWAYS, SQUARES	X	X	X		
	S	SANITARY FACILITIES	X			
SCHOOLYARDS AND PEDESTRIAN ZONES		X	X	X		
SCRAP METAL YARDS		X				
SEEPAGE/PERCOLATION, CENTRAL		X	X			
SEEPAGE/PERCOLATION, DECENTRALISED				X		
SEWAGE PLANTS		X				
SOAKAWAY TRENCHING ELEMENTS				X		
SPORTS GROUNDS			X		X	
STATION PLATFORMS		X	X			
STEPPING BOARDS			X			
T	STORAGE, DECANTING, FILLING - HAZARDOUS LIQUIDS	X				
	TRACK DRAINAGE	X				
U	TRACK DRAINAGE				X	
	TUNNEL DRAINAGE	X	X			
	TURF REINFORCEMENT		X			
	W	UNDER FLOOR CHANNELS, CABLE DUCTS	X			
		UNDERGROUND CAR PARKS, MULTI-STOREY CAR PARKS	X			
Y	WALL COPING		X			
	WASH FACILITIES	X		X		
	WASTE DISPOSAL SITES	X				
	WELL BORDERS	X	X	X	X	
YARD GULLIES	X	X				

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WE RESERVE THE RIGHT TO DO TECHNICAL
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